

Mr. A. *Harke*
DISQUISITION
OF THE 1507/1573
STONE and GRAVEL;

TOGETHER WITH
STRICTURES on the GOUT,
When combined with those Disorders.

By S. PERRY, SURGEON.

Plus vident Oculi quam Oculus.

The SIXTH EDITION, improved and enlarged.

L O N D O N:

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M DCC LXXIX.



TONS and GRAVELS

FORGET WITH

STRICTURES on the GOVT

When compared with the Librarian

W. S. LEBBY, Esq.

DEDICATION
TO THE
ROYAL COLLEGE
OF
PHYSICIANS,
LONDON.

GENTLEMEN,

IT is usual for authors to inscribe their writings to some distinguished person or society, from whom they expect protection against the malevolent criticisms of the world: and as I am fully persuaded there is no authority whose award can be more decisive than yours, I cheerfully submit the merit of this performance to

iv DEDICATION.

your tribunal, from a consciousness, that, without your approbation, the concurrence of others could have no weight.

As the doctrine respecting the cause of the Stone is new, I am certain it will undergo various tests, which, in a manner, will subject it to approbation or censure, according to the interests or inclinations of some: If, therefore, from a candid examination it should meet with your countenance and support, I shall have nothing to fear from the cavils of Individuals.

In respect to the latter part, which treats of the discovery of a *Cure* for the *Stone*, I flatter myself the world
will

DEDICATION. v

will do me the justice to view it in its proper light, particularly as I have not dealt in conjectures, but in matters of fact.—Hitherto Lithotomy has been necessarily called in, because no real cure of the Stone has been pointed out. When, therefore, the following facts shall be known to you, it is not to be doubted but your humanity will, as far as may come under your influence, withhold *that* operation, while a cure is likely to be had in a safer and easier way.

The only farther favour I wish for is, that so far as you shall find this treatise useful, you will be pleased to patronise it.—The advantage that may accrue from your countenance,

VI DEDICATION.

in the present instance, will serve to distinguish the author from an *empyric*, under which appellation the favourers of any arcanum are too likely to fall, and with which persons, I am sorry to say, the world (particularly London) too much abounds.

I flatter myself it is unnecessary to say more, than to assure you, that no one has a greater veneration and respect for the profession, than,

Gentlemen,

your most obedient,

humble Servant,

S. PERRY.

*Argyle-street,
June 1, 1779.*

}



PRE-

P R E F A C E.

IN the whole list of diseases, to which the human frame is subject, none is more dreadful in its consequences to the patient than the *Stone*. It attacks the most robust constitutions, in which case, the inflammatory symptoms being sometimes carried to a high degree, make the patients suffer, at once, both pain and imprisonment.

The *Stone* has been long deemed the *opprobrium medicorum*, the only resource from which was thought to be the knife. I shall not pretend to say what proportion have fallen who have sought refuge in the operation; but to the honour and credit of our surgeons, be it said, that, lithotomy in no country was ever more
judici-

viii P R E F A C E.

judiciously performed than in this : notwithstanding which, if we consider the number of persons who are excluded from the operation, inasmuch as the season of the year, age, and constitution of the patient, must all conspire to render it successful ; we shall still find its evils but palliated in a small degree ; for, however proper the subject may be deemed for undergoing the operation, no one will infer that his life is not in *imminent* danger ; and though he should survive this most perilous operation, unhappily for him, he is not insured from a future attack. It should also be observed, that in extracting the Stone, nothing is more common than its giving way to, and crumbling under the forceps ; or there may have existed separate *nuclei* in the bladder before ; in either of which cases, a part may, by eluding the search of the scoop, begin a new concretion, and so
lay

lay him liable to the same disease in its aggravated state : for at best, there seldom fails to ensue an uneasiness in the part itself, from the contraction occasioned by the cicatrix of the wound. But even admitting there were no obstacles to the operation itself, yet, considering the concurrent circumstances just now mentioned, and that many are out of the reach of able operators, it is presumed the public will look upon the discovery with a favourable eye, since the operation, at all events, must be deemed as delicate, as it is dangerous.

Now although it is not positively asserted, that the subsequent remedy will do more than remove the disease when present, yet no one will object to the probability of its preventing it afterwards, when he considers the nature of its operation. If we remove a disease, by separating

2 P R E F A C E.

rating or destroying the principles on which that disease is formed, the cure will undoubtedly be more permanent than when the effects only are taken away :
sublata causa tollitur effectus.

There is nothing so difficult to be subdued as opinions formed on the basis of common prejudices. There are, no doubt, at this time, persons who deny the possibility of dissolving a stone in the bladder; arguing, that whatever dissolves a body of a texture so hard, must of course destroy those vessels through which the *menstruum* is conveyed. I do not think it necessary to observe, how far they discover, by such a mode of reasoning, their ignorance of the anatomy and œconomy of the human body. By advancing such a doctrine, they deny the existence of that well-known property of medicines acting specifically or electively.

Are

Are there not medicines which strongly affect the last secretion of the body without being felt in any manner by the stomach which first receives them? as in the case of cantharides. If mercury be rubbed into the soles of the feet, will not its effects be first found in and near the region of the head, particularly in the saliva?

It is nevertheless certain, that a cure for the Stone is not to be found among those medicines which operate by dint of a corrosive power only: there must be an affinity between the dissolver and dissolvend, a *specific* and *local* operation on the stone or the urine itself, otherwise we might as well expect to find a cure in *aqua fortis*, *oil of vitriol*, *volatile spirits of sal ammoniac*, &c. for either of those will destroy one of the principles of the Stone,

xii P R E F A C E.

Stone, and might therefore be called
lithontriptic.

In order to convince persons of the possibility of dissolving a Stone in the human body, it will be necessary they admit the two following postulata; first, that there is in the urine of every one wherewithal to form a Stone, but that a particular disposition of the vessels, thro' which that fluid is secerned, is necessary to the putting in execution that promptitude of the urine to run into such concretions; secondly, that an unforeseen accident, as will hereafter be shewn, may supply the place of that disposition of the vessels to form such concretions. These premises being admitted, which for the present I call postulata, but which, in the course of this work, shall be proved to be matters of fact,—then it must be obvious, that if we can deprive the
urine

P R E F A C E. xiii

urine of that property of running into concretions, although we do not change the disposition of the vessels themselves, we not only prevent the farther accretion of the Stone, but by depriving it of the principle of concretion, its tenacity will be destroyed in proportion to the quantity or contents of its surface; and therefore in what ratio soever its mass was first formed or accumulated, in the same ratio at least, will it be reduced, till at length its particles will be intirely separated.

I flatter myself that no one will deny the propriety of the former conclusion, when I shall have converted these postulata into matters of fact, and proved that it is in the power of medicine to unite with, and destroy that property of the urine of running into concretion; so neither can I doubt that when the experiments

xiv P R E F A C E

ments in the course of this work shall be laid open to, and carefully considered by the reader, he will become a convert to the doctrine here advanced; and that, if he had heretofore been persuaded of the insolubility of human calculi, he will now change his opinion, and be thoroughly convinced that the Stone can no longer be called the *opprobrium medicorum*.



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ERRATA.

ERRATA:

Page 19—Line 1, for these read those

- 20— 1, for those read these
- 20— 17, for capelliare read capillaire
- 27— 1, for as read to be
- 31— 21, for primity read primary
- 52— 11, for calculus read calculous
- 52— 18, for stoney read stony
- 59— 8, for spincter read sphincter
- 64— 17, for spincter read sphincter
- 65— 7, for inscission read incision
- 86— 14, for a kidney read one of the kidneys
- 101— 16, delete ,



A
DISQUISITION
OF THE
STONE AND GRAVEL.

CHAP. I.

SECT. I.

BEFORE I treat of the cause of the Stone and its concomitant symptoms, it may not be thought improper by some of my Readers, to give a short anatomical description of the parts most nearly concerned in that disease, as it will enable them better to comprehend several Sections of this Work.

B

OF

OF THE KIDNEYS.

A human body contains two kidneys, both placed in the abdomen or lower belly. The right is seated under a part of the liver, the left nearly between the spleen and musculus lumbaris; both under the mesentery or duplicature of the peritoneum.

In man, the right kidney is somewhat lower than the left; but in quadrupeds, the left is generally the lowest.

They have each two membranes, (the exterior of which joins them to the loins and diaphragm) and are fastened to the bladder by the ureters. They are of a glandulous substance, interperfed with an infinite number of small pipes or canals, and in figure much



much resemble a bean: whence the name *Kidney Bean*.

They receive their blood-vessels from the vena cava and aorta by the emulgent arteries, whose numberless ramifications extend thro' the whole substance of the kidneys, and terminate in glands of a globular form, which compose the cortical part of the kidney, of about half an inch thick, and of a liver colour.

From each of these glands issue out the tubuli belliniani, which extend themselves toward the pelvis, or internal cavity of the kidneys, and form the papillæ; adjoining to which, is the canal called fistula membranacea, thro' which the urine is conveyed, that it might be discharged by the ureters into the bladder.

The blood, remaining after the secretion of urine, is remitted to the heart by the minute capillary veins, which arise from the extremities of the arterial branches, being inclosed in the same capsular with the artery that terminates at the cava.

There are likewise a multiplicity of muscular fibres in the structure of the kidneys, which demonstrate, that they are of other uses than that of secreting the urine; *viz.* for the ejection or expulsion of any concreted substance that might be lodged therein.



S E C T. II.

O F T H E U R E T E R S.

There are also two ureters which pierce the substance of the kidneys,
and

and convey the urine from their cavity into the bladder. They are generally of the size of a goose-quill,—are membranous and fistulous, and of unequal diameter; and though they are capable of great dilatation, yet obstructions in them frequently happen which are of infinite consequence to the patient, occasioning a suppression of urine. If either be afflicted, a strangury commonly ensues.



S E C T. III.

OF THE BLADDER, OR VESICA URINARIA.

The bladder is composed of three membranes; the exterior common from the peritonæum, the other two proper to themselves. The middle one is made up of carnos fibres,

longitudinal and circular. By the action of the longitudinal the fund of the bladder is pressed forward towards the os pubis, from the lower part of which they arise, as well as from the fore part of the prostaticæ; while the circular ones, by lessening their dimensions, excite and procure the discharge of the urine.

The inward membrane is nervous, and of an exquisite feeling: hence is accounted for the violence of the inflammation when the urine is become acrimonious by being too long retained, it being proved to be the most putrescent of all known liquors,

The bladder would be subject to many more accidents, were it not defended on all sides by a vast number of glands, which continually emit a mucus that serves to blunt the
urine

urine of its salt. When this natural mucus is deficient, a disease of another nature is produced, which can only be remedied by balsams and mucilages taken freely off to supply its want.

It is a kind of reservoir which receives the urine of the kidneys, that it might not be evacuated continually, and against our consent; as I once observed in a boy who had no bladder, and who used to beg among the Faculty.

For the more easy emission of the urine, nature has furnished it with a sufficient excretory duct, which is the urethra. This being tender, like the inward membrane of the bladder, it is lined, in the same manner, with glands, which emit a slimy mucus

that also defends the passage from being excoriated by the urine.

Both the bladder and urethra derive their veins and arteries from the epigastric and iliac nerves, and from the pelvis of the abdomen; and, by communication or sympathy, are often equally affected in an acute inflammatory disease.

As from the unnatural temperature or ill condition of the urine, proceed the various diseases of inflammation, stones, gravel, and all fabulous concretions; I shall treat briefly of its constituent principles, that its nature may be better understood by those who are not conversant therein.

SECT.

S E C T. IV.

O F T H E U R I N E.

That the urine is an elementary fluid, or, rather, made up of elements, is evidently demonstrated by the frequent experiments made on it by Chymists, from which they extract an insipid lymph, a volatile spirit, an acid saline matter, some oil, and a fixed earth.

There is a singular property in the urine, which is, that many medicines affect it even before the stomach, which first receives them: or, indeed, it may be properly enough said, without any sensible effect at all in the stomach, intestines, or even in the blood itself, from which the urine is secreted.

We

We find that a blister will induce a dysury and inflammation of the neck of the bladder, by rendering the urine acrid with its salt, when perhaps no other part feels any inconvenience. The smell of paint, from the turpentine contained in it, will produce the like in a milder degree, and give the urine, when first made, the fragrance of violets; notwithstanding, these but little affect the blood or its circulation, except when the pain becomes a stimulus.

This peculiarity and property of the urine, was a concurrent motive for my undertaking the discovery of a remedy for the Stone, upon the principle of a specific operation.

C H A P.

C H A P. II.

S E C T. I.

O F T H E G R A V E L.

WHEN we have considered the nature of the Fluids of the human body, particularly the Urine, and also, that their circulations and progressive motions may be retarded by various means and accidents, no wonder that the urine will deposit, in the part where it rests, an earthy sediment, which it never fails to do when out of the body.

Heat being generated, and maintained by agitation and continued motion,

motion, it is evident, that when this latter is impeded, the fluids will grow cooler, and be more liable to let fall their earthy part.

For the actual causes of the *Gravel*, the Reader is referred to Chap. III. Sect. 4. which treats of the cause of the *Stone*, since both are, in fact, the same disease in different degrees; and the same causes that produce the former must, and do evidently, bring on the latter.



S E C T. II.

OF THE SYMPTOMS OF THE GRAVEL IN THE KIDNEYS.

The symptoms of the gravel are various, according to the degree of violence of the disorder itself; but the most
common

common are, a dull obtuse pain in the kidneys, or in that part of the loins where they are attached. Sometimes the pain is very acute, accompanied with bloody water, which, if retained any time in the bladder, becomes of a darker or Coffee colour. A nausea and vomiting will likewise be excited; frequently a total suppression of urine from spasms induced by the irritation of the particles of gravel in the kidneys, and the pain will extend itself along the ureters to the bladder; in which case an uneasiness is felt in the side, particularly after a full meal, or much exercise, or from any distortion of the body, riding on horse-back, &c.

The kidneys, as well as all other organical parts, are subject to inflammation, resolution, and suppuration; which last is not absolutely incurable,

curable, as it may sometimes be remedied by balsams that deterge and dispose to heal. Balsams of capivi, turpentine, &c. are of service here; likewise, drinking freely of diluting mucilaginous drinks, as barley-water, marsh-mallow tea, and such like.

There is a species of rheumatism, called *Lumbago*, from its affecting the region of the loins, which has been frequently mistaken for a nephritic complaint; but the former may be distinguished from the latter in this, that the patient has no uneasiness in making water, but may induce a pain by bending his body forwards, as in this case the muscles are put on the stretch: on the contrary, if it be the gravel, his pain will neither be increased nor diminished by it.

S E C T. III

OF SYMPTOMS OF THE GRAVEL IN
THE BLADDER.

The same complaints, with a little variation, will affect a Person when the gravel is in the bladder. Sometimes a pain will be felt in the latter, when the kidneys are quite free from it, in which case the inclination to make water is frequent, and in small quantities. At other times a strangury is the consequence of the stimulus of the earthy particles against the sides of the bladder, to which it is liable from the fineness and number of its nervous branches.

It is necessary to be particularly attentive to the cure of the gravel, as by that mean, the formation of a stone may be prevented.

SECT.

S E C T IV.

OF THE CURE OF THE GRAVEL IN
BOTH BLADDER AND KIDNEYS.

Since it will be shewn hereafter, that the Gravel and Stone are not only produced by the same cause, but are, in fact, the same disease in different degrees; the cure of the former must of course be much involved in that of the latter, with this difference however, that in the gravel we may venture to give diuretics and stimulants, which we cannot with safety administer in the stone, inasmuch as all stimulants do mischief where the calculus is too large to pass the vessels. Every one's reason must inform him, that if the concretion in such a state, be driven forward, the consequence must be a laceration in the part, and, perhaps, a subsequent ulcer or dangerous hemorrhage of blood.

This

This circumstance happened within my observation, some time ago, to a man to whom I was called a short time before he died. As he was then incapable of answering any questions (the loss of blood having thrown him into a deliquium) it was requested, after his death, that he might be opened; when it appeared, that a piece of stone about four grains in weight, had lacerated the inside of the left ureter, and brought on the discharge of blood which occasioned his death: for when it had insinuated itself into the ureter, it became a stimulus, and induced such convulsive twitches and contractions in the part as proved fatal to him. It was discovered that he had taken a large dose of spirits of turpentine in burnt gin.

C

Stimu-

Stimulating diuretics are, nevertheless, very serviceable in the most simple state of the gravel, when the bladder, by its laxity and inertness, has suffered the urine to separate and deposit its earthy part therein. The common diuretics of the shops, and such as have been most frequently used in the gravel, are the spiritus nitri dulcis, sal diureticus, lime-water, and all terebinthinate preparations.

Altho' the symptoms of the gravel are different according to the seat of the disease, yet the cure should be undertaken in the same way, whether it be in the kidneys or bladder: I would recommend a dose of Rochelle salts and manna as a purge to precede the other remedies. Sweet spirits of nitre is a most agreeable diuretic, and is attended with none of these

these consequences to which soap, lime-water, and turpentine are.

Although bloody urine is ranked among the symptoms of the gravel in the kidneys, yet it is always to be doubted whether it be not rather the consequence of a stone; in which case, I would advise every one to avoid stimulating diuretics or forcing medicines: for altho' such symptom may sometimes be the consequence of loose gravel; yet, I dare say, nineteen times out of twenty, it is really that of a stone. Indeed, at all times the symptoms, whether of stone or gravel in the kidneys, run so much into each other, that it requires a very minute attention to discriminate them. It is a consolation, however, to the afflicted, in these cases, that although the means we might pursue in curing the gravel, would be highly improper in the stone. Yet, happily for

the afflicted, those experiments have suggested to us, that the same medicine which can cure the stone, must be equally efficacious in the gravel:—for there cannot be a more lamentable state, than a man under the doubt and perplexity of two diseases, where the treatment of the one should be diametrically opposite to that of the other.

The regimen of the gravel, whether in the kidneys or bladder, should be adapted to the urgency of the complaints. A cooling diet is always proper; and if the urine be hot, and high coloured, plentiful draughts of balsamic liquors should be taken; such as veal broth, barley water, marsh-mallow tea, capelliare and water, or orgeat. It will also be necessary to attend minutely to the sediment in the urine, whether it be of an earthy or slimy kind: if of the latter, it indicates great irritation. In this case, violent motion
should

should be avoided ; and large draughts of the above diluting liquors be taken every three or four hours till it abate.

Let it be observed, that exercise is always to be recommended where the gravel is evacuated without pain :—but if irritations, discoloured water, or pain, be attendant on the discharge, rest must be indulged, and the body kept cool.

After the total expulsion of the gravel, it will be proper to have recourse to astringent and strength'ning medicines, to brace up the relaxed vessels ; but above all the cold bath must not be omitted.

C H A P. III.

S E C T. I.

O F T H E S T O N E.

THE Stone, called in Latin, *Calculus*, from its resemblance to stones of the earth, is found by a chymical analysis, or decomposition, to consist (as well as urine) of an earth, air, oil, and volatile salt; and that such substances are capable of forming bodies of the hardest texture, by attraction and adhesion, is clearly proved in the making of glass, which is a combination of earth (or sand) and salt, with fixed air. The human Calculi are of very different degrees of density and cohesion; some being

being so loose and friable as to crumble to pieces between the fingers, while others have been taken from the body, of such a compact and flinty nature, as to have struck fire in collision with steel. From which premises it is easy to conceive that the violence of the symptoms of the stone must be various.

It is no wonder that stones so often form in the kidneys, since the disposition of the urine will naturally shew itself as soon as it is separated from the blood ; that is, the stony particles having as strong an endeavour to unite with one another in the kidneys as in the bladder, will, in consequence of meeting first there, be most likely to produce gravel and stone in that part ; where they continue to accumulate till spasms, or convulsive twitches are excited, by which they are sometimes thrown into the ureters, and at last, into the bladder.

S E C T. II.

OF THE CAUSES HITHERTO ASSIGNED
OF THE STONE.

Chymists, and many natural philosophers, as Sir Isaac Newton, &c. have analyzed or decomposed the human Calculus, and have found it to consist of those principles already described in the preceding Section: and although the different authors could not but agree, as to the nature of the separate principles which compose the stone, yet almost all of them have entertained different opinions of the cause or conjunction of these principles in its accumulation.

It may probably be thought presumptuous in me in first attempting to account for *that*, which rendered vain the labours of so many men, eminent for their learning and sagacity. After reciting my
adopted

adopted motto, "*Plus vident oculi quam
oculus*," I confess myself indebted to the
result of their researches for many parti-
culars, which have assisted me herein,
and which, otherwise, might never have
occurred to me. The immortal HERVEY,
who discovered the circulation of the
blood, left still enough to be done by
his successors, in applying it to physic
and anatomy : and although the ancient
physicians were unacquainted with that
part of the human frame, yet in point
of learning, may it not be said, they
were superior to most of the moderns,
and that they laid the foundation of ma-
ny structures which embellish and adorn
the present age.

What I have just now said shews the
weakness of giving up a pursuit, be-
cause it has been fruitlessly undertaken
by one or many *great* men. Some of
the first physicians have asserted, that
the

the operations of many medicines, in particular *mercury*, was indefinable ; and yet I am inclined to believe, there are but few who do not know, at this time, on what *its* specific qualities depend. Without any further apology then for contradicting the opinions of my learned predecessors, I shall appeal to the judicious and candid, how far I have removed the epithet of *Occult* from the causes of the stone.—I shall however first recount those causes assigned by authors, who have hitherto written on the subject.

The first who treated of this disease, imputed the cause of it to an error in the non-naturals, particularly an improper choice of food, to which was added, the too free use of crude unfermented liquors. This cannot possibly be the case, since we see that all ranks of people, the sober as well as the luxurious, partake of this disease. Climate

was

was then imputed as the cause of the stone ; which can by no means be allowed, as we find in hot as well as cold countries, the stone exerts an equal influence. It has also been considered as analogous to the tartar in wine, and that it was produced by a too free use of that liquor. This cannot be deemed more conclusive than the former, because, in countries where wine is little drunk, nay, in persons who never tasted of it, the Stone has made great ravages. A petrifying quality in the fluid we drink is said also to occasion the Stone ; To support which opinion, Paris is mentioned as a place where that disease abounds, from the quantity of stone contained in the river Seine : but from a strict inquiry concerning this matter, I am fully convinced, that there is not a more proportional number cut in Paris than in London ; and the greater part of these come from towns and villages where

where the Seine has no communication, I must confess, that I myself formerly ascribed the Stone to some one, or a conjunction of the forementioned causes, till, by a particular attention to the disease, and the regimen of those who were under its influence, I was undeceived.

To satisfy myself how far an attention to the water we drink might conduce to prevent the stone, or retard its growth, I set about making the following experiments. I caused a tin kettle to be made in the common form, except that the cover was raised by means of a jetting open rim, to the height of one inch, and being of a larger diameter than the kettle itself, it entirely kept out any dust that might accidentally fall down the chimney; while its construction as readily suffered the water to evaporate. I then set a common alembic to work, in which
I dis-

I distilled several hundred gallons of New River water, and supplied the evaporating kettle from the worm as it ran off. The head of the still had a swan neck, and being slowly worked, nothing but the fluid in its purest state could be drawn off.—After thirty-six hours operation, I suffered the kettle to run dry, and examining it carefully, I found a considerable portion of saburra or earth, after the manner of the fur or crust adhering to a tea-kettle. This circumstance convinced me, that the strictest attention to the water we drink, is not sufficient to exempt us from the Stone.

In order to satisfy myself as to the possibility of a *strictly* elementary fluid, I made an experiment with snow water in a smaller degree, but sufficient to discover that it also yielded a crust after a continued evaporation. This led me to conclude, that there is no possibility in
human

human nature of obtaining a pure elementary water, that does not contain a portion of earth in it; and I am fully persuaded, that, if the evaporated fluid had been again condensed and made the subject of a third coction, there would still have been collected some particles of earth. In a reiterated distillation, I suffered the water, after it had been drawn off, to stand covered over three days, and boiling it the same time as before, a greater quantity of *saburra* was collected; by which I conceive, that the primary particles of earth had time to attract each other, and, consequently, by increasing their specific gravity, were less liable to be carried off in the efflu-
vium. Now, although it should be possible to construct a still with a neck of a wonderful height, that much more of the grosser earth might be detained in the bottom, (for I forgot to mention that a great deal more *saburra* was found
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in the still than in the kettle, although the water was at first apparently clear) yet that would not be likely to do more than catch the particles in a collected state; for, there is not a doubt but the primary particles of stone are lighter than quicksilver; and yet that ponderous body can be so rarefied as to be borne up by a very subtil æther, or fine vapour. It is therefore plain, that although you might distil water until you could no longer discover stony particles in it, it would not prove there were none; on the contrary, it will be found, that after it has been strained, filtered, and distilled, *as it were*, through some of the finest vessels of a human body, (which are a thousand times more exquisite and elaborate than *art.* can supply) I say, that after all this, it will be found to contain these primity particles of stone.

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Some time after I had made the foregoing experiments, I was informed that a gentleman of Lincolnshire had been cut for the Stone, and in hopes of avoiding that cruel persecution again, had furnished himself with a still, through which he had drawn, for four years, every drop of water he used; not only as drink, but even to prepare his meats in; and yet he was unhappily seized with the disorder a second time in his kidneys, and by a fall from a gate so lacerated the containing vessel, that he bled to death. Many other persons have been led to drink only distilled water, from a notion of its being entirely freed from its earthy particles; which indeed, has, at first view, a great deal of plausibility in its favour,

S E C T. III.

INFERENCES DRAWN FROM THE
LAST SECTION.

Seeing then that we cannot, by any known operation, free *water* from a certain quantity of earthy particles, we must conclude, that in it is contained the subject-matter of the disease ; notwithstanding, it cannot be said to be the disease itself, because thousands continue in health who drink it without restraint.

Thus much being premised to prove, that no one of those causes hitherto assigned of the Stone is the *true* one, and that it is not in our power to prevent the disease from falling to the lot of some among us, it behoves me to declare what, in my opinion, is that *true cause*.

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In order to understand more perfectly the cause of the Stone, it is necessary to shew by what means the fluids we drink are conveyed to the blood; from which it will appear, that although a man should swallow a great quantity of sand, or powdered stone in his drink, he would be no more liable to have one form in his body, than if he had taken the fluid, in its natural state.

The chyle, or any other fluid, is conveyed to the blood, from the stomach, by means of small lacteal tubes or pipes. Nothing can pass from the mouth, or more properly from the stomach, to the blood but by means of these concoctive strainers and canals, which are the smallest in an animal body. If this was not the case, such particles of matter might be admitted into the blood as could never be discharged again, which would consequently be productive of obstructions,

tions, the most inveterate and incurable. It is equally certain, that the absorbent vessels or recipient lymphatics, which are spread over the surface of the skin, are smaller than the interior ones, otherwise the same mortal obstructions would ensue. Now it is evident, in fact, from microscopic observations, that the largest blood globules do not exceed $\frac{1}{2000}$ part of an inch in diameter: It is also well known, that the diameter of a particle visible to the naked eye, must not be less than the $\frac{1}{100}$ part of an inch, whence it follows, that the magnitude of one of these larger blood globules, is less than the largest visible particle in the proportion of 8000 to 1; and therefore, should these blood globules, without any further attenuation or division, be supposed to pass the glandular secretories, they must come off in an extremely thin attenuated effluvium or vapour, the particles of which would be 8000 times less than

any sensible or visible particles. But it is certain, that the diameters of the largest secretory ducts or glandular strainers, must be less than the least of the blood globules; otherwise these blood globules themselves would pass those strainers, and be thrown off in bloody secretions, which we know cannot happen in a natural state of the fluids and solids.

How much less the smaller globules are than these already taken notice of, cannot easily be ascertained, since they are imperceptible, even by the best microscopes.

It is a fact that Lewenhoeck and others have discovered an infinity of these secretory and excretory vessels, the diameters of which do not exceed $\frac{1}{80000}$ of an inch, and consequently, a fluid cannot pass and repass them, until it has been so far rarefied and volatilized, as that its
largest

largest particles shall be less than any visible or sensible particle, in the proportion of 512000000 to 1.

This great rarefaction of the fluids in their circulation, or immision and emissions to and from the blood, may seem strange to some, and yet it is certain, that fluids are capable of being rarefied or effluviated into any assignable degree of tenuity. To make this familiar to us, let us but consider, how far the most dense and solid substances, as those of metals, may be divided or attenuated by the help of art.—Doctor Halley has proved (Philosophical Transactions) that one single grain of gold is sufficient to overlay or gild, ninety-eight yards of silver wire; and has also shewn, that the thickness of these *lamellæ* does not exceed $\frac{1}{114800}$ of an inch, which is less than the diameter of one of these small excretory tubes before taken notice of.

Now, from what has been advanced, it is obvious, that nothing can pass the lacteals, and be taken into the circulation, but in the form of a fine attenuated vapour; therefore, all the powdered snails, egg-shells, and other insoluble ingredients, in the composition of Mrs. Stevens's medicine, since they cannot be absorb'd by the lacteals, could in no way materially affect the urine. This natural process may, to many, seem very new and wonderful; but it is a fact, that all the boles, calcined earths, and minerals, commonly prescribed as alteratives of the blood, cannot possibly claim any pretention thereto. If it be asked why impurities of the blood are often removed by cinnabar and other preparations of antimony, if they are not absorbed with the chyle, I answer, that by deterring the primæ viæ & viscera, and cleansing the orifices of those vessels in their passage through the body, such
vessels

vessels are enabled to convey a larger portion of chyle into the mass ; and consequently, nature gradually overcomes the disease by throwing off, by the excretories, in proportion to the additional supply.

Notwithstanding the surprising smallness of these vessels, we need not wonder how a body so large as that of a man, should receive sufficient nourishment thereby, when we consider the vast infinity of them, and that the stomach and smaller viscera are capable of absorbing and carrying to the blood, by their means, several gallons in twenty-four hours. Nor is it possible to say what quantity of urine the kidneys are capable of secreting from the blood in that time ; but, I have (in a case where poison was suspected to be received into the blood) so supply'd a man with diluting liquors, that he made seventeen quarts

of urine in one night's time, the greater part of which, from its short stay in the blood, was evacuated quite insipid.—At a more convenient time, I shall endeavour further to amplify and elucidate this part of the animal secretion, so far as concerns the cure of cutaneous eruptions, and glandular obstructions:—thus much I judged necessary here, as it proves incontrovertibly, (contrary to the general opinion) that the stone is not occasioned by an improper diet:—neither can the blood, in any degree, be said to circulate or convey any concreted stony particles to the kidneys; for it has been shewn before, that the glands of the kidneys are smaller than the lacteals themselves; they therefore could not pass, but would, in accumulation, occasion disorders, more immediately fatal, than that of which we are treating.

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From the very great difficulty of establishing any new opinion, which militates against a generally received one, I think it necessary to relate the particulars of the following experiments, which, as they may be repeated by any indifferent person, will be likely to exempt me from the imputation of substituting notions instead of facts: and as it would be presumption in me to expect a greater indulgence than others before me, who have advanced any new doctrine, I am particularly solicitous of convincing from demonstration.

EXPERIMENT I.

I took a fragment of a human calculus of 5 grains weight, and put it in the urinal of a person, who never had the least complaint of the Gravel or Stone, and whose water was bright and transparent; — After continuing it thus for seven days

days, I weighed it, and found but little alteration; but considering that the motion of the urine in its emission from the body, might agitate the Stone, and so dislodge any saburra that should loosely adhere to it, and thereby frustrate the experiment, I removed it into another vessel, and poured the urine gently into it after it was made; by this mean it was suffered to be more at rest. At the end of twelve days, I again weighed it and found it had gained more than half a grain. I could observe, by the help of a glass, that the accumulation was principally on the roughest side, which was that broken from the larger Stone. The same experiment I repeated with the urine of a child, and found the same effects in almost an equal degree.

EXPE-

E X P E R I M E N T II.

A gentleman applied to me to be cured of a Stone in the bladder; but as he had at that time another disorder upon him, which required an immediate attendance to, I forbore, during a fortnight, to prescribe to the Stone, but desired that his urine, during that time, might be poured upon a bit of calculus of exactly eight grains weight: Now although its surface was larger than the first fragment, yet, at the end of that time, it was not increased in the smallest sensible degree.—I was not however perfectly satisfied with this experiment, fearing the medicines he was taking, might have caused his urine to be brought off in so crude a state, as to prevent it from giving out its share of earth: To satisfy myself of this, I got the urine of two persons, under the same course of medicines

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in Bartholomew's Hospital, into which I immersed a piece of calculus as before: at the end of only nine days, it was increased nearly half a grain; from which it is plain, it was not any thing in his course of medicine that with-held the urine from resolving into that earth, which should have even increased the piece of calculus, as in the latter experiment.

The inference to be drawn from the above is, that the Stone, which was already formed in his bladder, continued to attract the earthy particles from the urine, as soon as it came into the bladder. I was further confirmed in this, by his telling me, that for several years, previous to his attack of the Stone, he had voided urine, at times, very thick and muddy, or sandy; but that since he had discovered he had a Stone formed, his urine had been at all times limpid, and
clear

clear of all sand or grit; nay, that it was bright as amber, except when he had taken any violent exercise, after which it would be loaded with mucus, or tinged with blood.

Since I had made these experiments, and drawn the conclusions from them, I have read Dr. Priestley's Experiments and Observations on fixed Air, with an attention equal to their great merit. Had those volumes fallen into my hands before, I might have saved myself much labour and reflection, in attempting to shew that we cannot prevent the stony atoms from making their way into the urine; since this ingenious author proves, that earth can be converted into air, and even rendered respirable. It is therefore not very improbable but we may receive many of those particles in inspiration, as well as by the work of Chylification; for the chyle itself must be subtilised into a vapour

vapour or air before it can pass the Lacteals. Seeing then we may be perfectly assured that no human art can withhold the stony matter from the urine, of what salutary consequence is the distilling of our fluids? How far indeed the particles may be retarded from running into cohesion, is a subject that shall be left for future consideration.



S E C T. IV.

OF THE REAL CAUSE OF THE STONE.

The first experiment with the evaporating kettle, convinces us, that water cannot, by any human operation, be freed of a certain portion of earthy particles, which are in themselves so light as to be carried over the helm of a still with the vapour; and that this is not only

Lac. so in fact, but consistent with reason,
 fectly is evident in the distillation of quick-
 with- silver, which although specifically twenty
 ne, of times heavier than the hardest marble, is
 distil- susceptible of being borne up in the form
 d the of a vapour or exhalation.

These earthy particles, for the sake of
 perspicuity, shall, hereafter, be distin-
 guished by the name of *primary parti-
 cles of Stone*; and that these same parti-
 cles are the only ones capable of form-
 ing a Stone in the human body, is prov-
 ed by what has been already said on the
 nature of the vessels, which convey the
 chyle into the blood.

The first experiment in the last Section
 as clearly proves, that the urine of all
 persons partakes of those primary parti-
 cles of stone, which are contained in the
 fluids we drink; so that the only consi-
 deration that remains is, what first in-
 duces

duces the concentration of these primary particles, so as to become a nucleus of the Stone: for, from the second experiment of the same section, we find, that when once a nucleus exists in the body, it collects, by its attractive power, the particles on its surface, and so accumulates continually.—This attraction of the Stone is consistent with the manner of crystallizing salts, and is indeed conformable to the operations of all nature.

Hence it is plain, that the cause of the Stone can be no more than the urine being a longer time in circulating through the kidneys, or continuing longer in the bladder than natural, owing to an inertness of those organs, by which means the primary particles of Stone have time to enter into contact with each other. The amount of the disease, therefore, depends upon the degree of weakness or debility in either kidneys or bladder.—

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It is not possible to form any idea how many times smaller these primary particles of stone are than the least visible particle: but it is probable, that an accumulation might take place, and continue some time; and yet the collected particles shall still be too small to be seen by the naked eye, or even by the best glasses.—Nay, we can so divide and separate the particles of that heavy body, quicksilver, as that they shall not be traced by our best microscopes, and yet we cannot deny their existence or deem them annihilated: on the contrary, we can collect them again by *art* without their nature being in the least changed.

This then is the exact progress of the disease. By the œconomy and structure of our bodies, it is required we should drink a certain quantity of fluid to assist in assimilating our food, and to convey the nourishment to the blood,

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further

further to be distributed for the growth and strength of the whole. Now, as it has been proved that water, in its most pure state, still contains an infinite number of those primary particles of stone, it is evident, that we are liable, every hour we live, to be attacked with this disease.

From what has been said, it is plain, that the Serum of the blood, which yields the urine, contains those same primary particles of stone, they having been conveyed thither with the chyle. The cohesion of those particles, however, never takes place till they are, with the urine, carried to the kidneys; the reason of which is, that the particles are kept farther asunder while circulating in the common mass, and consequently out of the power of attraction of each other. The globules of blood, by their spherical figure, must also have a considerable

derable share in preventing the particles from entering into contact with one another. No sooner then has the secretion taken place in the kidneys, than the corpuscles are brought nearer to each other, and thus begin their attraction and cohesion.

But the most powerful impediment to the attraction and cohesion of those stony particles, while with the blood, is the continued circulation of this fluid; since, should they accidentally be brought into contact, the force with which they would be driven, would destroy the attractive and cohesive power, and excite the repellent one. That this is actually the case, in both principles may be illustrated by the experiment of two small globules of quicksilver, which though each strongly inclined to take up each other the moment of contact, yet were they to be driven together with a force equal to

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the blood's circulation, they would lose the attractive power and strongly repel each other. This is not only the case with cohesive attraction, but it holds good, also, in the other kinds, whether magnetic or electric; for if the propelling force be too great to suffer the cohesion to take place—repulsion is the natural consequence.

Thus a sufficient reason is given why a calculus concretion never can take place in the blood, since life would be extinguished before the circulation could be lessened to a degree sufficient to suffer a cohesion. No sooner then has the secretion taken place in the kidneys, and consequently, the fluid concentrated, in which the stoney atoms float, than these atoms or corpuscles are brought nearer to each other, and begin their attraction, which operation continues invariably during the whole time that fluid remains

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in the body. As soon, therefore, as two of these particles shall have met in contact, their power of attraction is multiplied (such power being in proportion to the surfaces of the attracting bodies) till, at length, from their increased specific gravity, they precipitate to the bottom of the fluid, in the shape of sand or gravel.

The circulation of the blood thro' the kidneys as well as the liver is naturally languid, which renders both liable to obstruction. The jaundice is the consequence of the former, as the stone is of the latter, for want of a greater elasticity to overcome the obstruction.

Now although the concretion, as has been already shewn, begins as soon as the urine is in the pelvis of the kidney, yet it may not arrive to such a degree as to bring on the gravel there; but the

urine, half disposed and prepared for the concretion, may, and does frequently, finish the work in the bladder.—Should this organ be preternaturally feeble, as well as the kidney, a stone will undoubtedly be formed in a very rapid degree; for as soon as a conjunction of the particles is increased to any material bulk, it not only acquires an increase of power, but likewise attracts from greater distances; so that other aggregate particles will be taken up in its accumulation.—

This is manifested in those congeries of small stones, called grape stones, the interior piece of which is always larger than those around it, and is certainly the reason why there generally forms but one stone at a time in each kidney. It is very unusual indeed, to find several in the bladder together, because, as they are collected in the kidneys, they may be thrown over into the ureters so large, that they cannot be further taken up in

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the way of attraction ; for in this case another power, viz. gravity opposes that of attraction.

Thus we see the great phenomenon of the stones accumulation to be nothing but a weakness in the kidney or bladder, or both ; to which, as well as all other organs and muscles of the body, they are exceedingly liable. Perhaps the kidneys are much more likely to suffer, and, indeed, do suffer more than the bladder, from their situation ; as their vessels may be put too much on the stretch by any violent exercise, or sudden curvature of the body.

Though the kidneys should be only in part weakened, by which the accumulation may proceed to a certain degree so as to form gravel, yet they may still be sufficiently irritable to expel the concretions while small, throwing them into

the ureters, and from thence to the bladder, which last may also be sufficiently strong and active to spurn at the oppression, and by the stimulus consequent on the movement of the concretion, there expel them in its turn thro' the urethra. This is the most favourable effect that can be expected when the disease has acquired the name of gravel; but if the bladder should suffer the accumulation to remain there but a very short time, its irritability considerably diminishes, the concretion greatly augments, and a stone is the natural and inevitable consequence.

I flatter myself, my Readers will now think I have clearly pointed out the real cause of the stone, which has given rise to so many hypotheses; and that I have as incontrovertibly expounded the mystery of the *nucleus* of the Stone, that hitherto inexplicable and undefined production, it being neither more or less than

than the conjunction of two of those fixed, or primary particles of stone; those two, when combined, attract a third, then those three take up a fourth; and so on, *ad infinitum*.—How many thousands of these may be necessary to make up a particle, visible to the naked eye, cannot be ascertained; but it is certain, that these atoms or corpuscles must be infinitely small, as it were, otherwise not a single person could escape the disease.

As weakness of the kidneys or bladder is the cause of the stone, much may be ascribed to accident, since a person may be forty years without having the least symptom of the disease, and yet one of those organs may become relaxed on a sudden, and thus lay the foundation for the most excruciating malady.

That there is always a disposition in the urine to form the stone, is certain.

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This circumstance has been often proved by foreign bodies being accidentally introduced into and left in the bladder, which have become a nucleus of a stone; notwithstanding the persons, prior to the accident, had never had the least indication of gravel whatever.

In St. Thomas's Hospital the point of an ill-prepared bougie broke into the bladder of a patient, and generated a stone.—In Guy's Hospital, a bit of leaden probe did the same. A drop of blood will become the *nidus* of those earthy particles, and cause a stone: from which circumstances it appears, that all extravasations of blood, and erosions of the vessels are dangerous.

THE CASE OF MR. C**P**N.

Mr. C——n, clerk to an eminent banker of this city, in the year 1774, contracted

contracted a disorder which, in the end, obliged him to suffer the frequent introduction of a bougie. This he did for a considerable time, when accidentally one fell into his hands so ill-prepared, that about half an inch of the point broke off and lodged itself in the bladder, having passed the spincter in its introduction. The accident being immediately discovered, he was a good deal alarmed, in-
 so-much that he instantly applied to one of the surgeons of St. George's Hospital for advice, who consoled him by saying,
 " That as the preparation of the bougie
 " was composed only of linen cloth and
 " an unctuous substance, no extraordi-
 " nary pain was likely to ensue from the
 " circumstance. The plaister part, he
 " said, would be daily wasted, and the
 " cloth might therefore, by conforming
 " itself to the passage, be one time or
 " other washed out with the urine; for
 " that since he had never had any, the
 " least,

“ least complaint of stone or gravel, or
 “ the least appearance of saburra in his
 “ urine, he would, in all probability,
 “ escape a disorder of that nature, al-
 “ though the broken part of the bougie
 “ was sufficient to become a nucleus.”

After this advice, he persevered as
 usual for two months in the use of the
 bougie, at the end of which time, being
 perfectly recovered in health, he left
 them entirely off, and continued in the
 same state for about eighteen or twenty
 weeks. Soon after the elapse of this pe-
 riod, finding himself indisposed, he came
 to consult me upon his case, which was
 as follows ; he had for some time suffer'd
 an uneasiness at the neck of the bladder,
 and on that part where the waistband of
 the breeches compresses ; — he had also a
 frequent desire to make water ; he felt
 an acute pain about the time he had
 done making it, and even for a few se-
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conds after; and was troubled with an itching or titillation at the nut of the penis. From these indications, I immediately pronounced the existence of a stone in his bladder, and then I was informed of what I have related in respect to the broken bougie. Now though I entertained no doubt of destroying the concrete formed upon the piece of the bougie, yet I told him, that the Solvent could take no effect on the rag itself; I was conscious, however, that by dislodging the concreted saburra, the saline part of the urine would act strongly upon the rag, and its attrition would in time wear it gradually away; and the more to ensure success from this method of procedure, I advised him, even after the stony part should be destroyed and evacuated, still to take Solvent enough to keep the urine from giving out the principles of a stone, so that the rag would be kept always bare for the urine to act upon it.

Mr.

Mr. C——n scrupulously followed my advice; the consequence of which was, that in five weeks the pain he had complained of left him entirely; and before he had taken five large bottles, the sand ceased to come away, and there was every assurance of the piece of bougie being reduced to its natural state.—After this he continued to take now and then a dose of the Solvent, till at length he began to believe that the rag itself was worn to pieces, as he had often discovered parts of it in his urine. This expectation induced him to leave off the Solvent entirely, by which he was soon convinced that there still remained some part of the fragment of the bougie in his bladder; for the same complaints and pain were again revived, though in a slighter degree, and, for the second time, he was obliged to have recourse to the Solvent, which operated exactly as before:—Indeed the certainty of his being liable to

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the same attack, while any the least part of the extraneous body lay in the bladder, determined him to omit on no account the use of the Solvent, till he should be perfectly assured of its being totally wasted away. For this purpose he took regularly three bottles more, which having brought him back to the state of ease he wished for, he then only took a dose now and then, but did not leave it off totally for eight months, at the end of which period he had actually every reason to believe the whole of the rag was expelled the bladder. Happily for him he was not mistaken in his conjecture; for although it is two years and more, since he took any of the Solvent, he has had no complaint whatever of the kind.

This case is one of the plainest and most convincing instances of the never-failing propensity in the urine to form a
stone;

stone; likewise, that although it may not be apparent to the eye, yet the urine is never without a certain portion of earthy faburra, such as will be always liable to form a stone.

Besides the above case of Mr. C***. **n, I was told of the following, by Mr. Du Fouart, first surgeon to the Marechal Duke de Biron, and surgeon-major of the Hôpital des Gardes, Françoises.—One of the king's guards had had a gonorrhea, which, for want of timely assistance to expel the virus, had produced the following evils:—The matter being retained in the passages had formed an abscess thro' the teguments near the spincter of the bladder. Now although by proper remedies the virus was at length totally destroyed, and carried out of the body, yet the urine was always extravasated through the orifice of the wound, which as it could not be brought

brought to heal, a *sinus* remained, that penetrated and perforated the perinæum. This cavity, formed a kind of reservoir for the urine, which trickled down the passage every time it was made, and gave rise at last to the concretion of a stone, and an incision was obliged to be made through the perinæum for its extraction; it being about the size of a hen's egg. A fistula, which the patient will, in all probability, carry to the grave, was the consequence of the operation. It should, however, be observed, that a passage is now made to give an exit to the extravasated urine, which prevents the formation of any new calculus. This man had never had the least indication of stone or gravel, nor can any be discern'd at any time in the urine he makes.

These are indubitable proofs of the validity of what I have advanced respecting the causes of the Stone, and prove,

as incontestibly, that no human foresight can be prepared to ward off an attack, as a stone may arise from an accident, contorsion, or distraction of any of the vessels concerned in the secretion of the urine, since the disposition or tendency of the latter to form a stone is never absent.

I once saw a stone that had been formed without the sphincter of the bladder, and was cut out of the urethra. It was at first supposed to be forced out of the bladder with the urine, and lodged there; but I discovered that it was formed in the passage in consequence of a caruncle or other obstruction that prevented the urine from passing freely off. Where, therefore, any of the before-mentioned causes exist, there can be no means of preventing the formation of a stone, but by having recourse to some medicine that deprives the urine of the property of accretion. These circumstances serve to point out to

us the propriety and expediency of taking such a medicine, at intervals, even tho' no stone may exist, but where this dreadful malady may be supposed to be in embryo ; for instance, in case where a person has been already cut for it, or where sand is evacuated with the urine ; since such persons have every reason to fear it daily.

A patient, Mr. Jamison, consulted me in a case of the gravel, which he had had for a considerable time to an extreme degree, insomuch that he was no longer able to walk or ride with any, the least, ease, and complained of exquisite pain in his loins, and in the neck of the bladder, with almost an entire stoppage in making water. Although I was convinced his case was gravel only, I gave him no other medicine than the Solvent, (of which mention will be made hereafter) by way of bringing it off and

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checking the disposition of the fluids from running into those concretions. In a short time he began to void prodigious quantities of florid, globular pieces of gravel, scarce ever urining without being able to collect half a tea-spoonful. The pain at the neck of the bladder abated, in proportion as the gravel was voided; but he never ceased to complain of a weakness and uneasy sensation about the loins and kidneys, even when the gravel was intirely evacuated. He continued quite free from pain at the neck of the bladder, and all other complaints but that of a weakness in the loins, for the space of about four months, when the gravel began to form again, occasioning the same disorders as at first. This second attack was treated in every respect like the first, during which he passed such an amazing quantity of globular pieces of gravel, as would astonish the most credulous. The cause of such

hasty

hasty and abundant collections of gravel, I considered as deserving particular attention. Finding it to be almost universally in spherical pieces, gave me reason to suspect that each separate globe might have a nucleus peculiar to itself; that is, a nucleus different from the mere junction of the primary particles. I was conscious that an excessive weakness of the loins occasioned the pain of which he complained, when the gravel was all expelled the kidney; and that altho' he had never made what might have been called bloody urine, yet a sediment was often observed at the bottom of the urine that had every appearance of fine blood globules, which had now lost their bright colour by lying in the urine. I therefore began to consider, that although in a natural state of the kidneys, the blood globules are prevented from passing the secretory glands, yet, should any of those glands be extraordinarily relax'd

some of the fine globules might pass thro' them with the urine and become nuclei, for those small grains of stone. That this might reasonably enough be the case, I considered that the reticular gland or membrane of the eye, when relaxed by cold, or a blow, or other injury, often suffers an extravasation of the finer blood globules, which is commonly called *blood-shot*. To satisfy myself, however, of the rationality of my conjectures, I carefully divided, in half, several of the round pieces of gravel, after which, with a good microscope, I was able to distinguish a cavity in the center of them, with an appearance that left me not a shadow of doubt, that globules of blood had been the nidus of the concretion.

Frère Côme, the noted Lithotomist of Paris, has made the same remark ;—and indeed it would have been difficult in any other

other manner to have accounted for the multitude of pieces of gravel that would form in so short a time.

The conclusion naturally to be deduced from this is, that if instead of so many globules of blood, detached, at once, they had all been collected in one mass or drop, that instead of the formation of so many grains of sand, there would have been, perhaps a single stone, which must have increased in a considerable degree, since it would have been supplied from that quantity of particles which were necessarily distributed to so many separate nuclei. Hence we see the necessity of applying corroborants as a removal of the cause of the disease, as well as prescribing to the effects, otherwise those same effects will be repeatedly likely to ensue. Besides extravasation, there are other means whereby the blood may mix itself with the urine; as from vio-

lent exertions of the body, such as a wrench, a fall, a sudden distortion, &c. —The kidneys are fuller of blood vessels than most other organic parts of the body, and having fewer nerves, are consequently less likely to be immediately sensible of any hurt they may receive. The pain of the back therefore, of which almost every one complains, when afflicted with the gravel, is not the consequence of the oppression of the latter upon those vessels, but is, in fact, the effect of the weakness which gave rise to the gravel itself.

We therefore need be no longer at a loss to account for the stone and gravel, since a weakness of the vessels secreting or containing the urine is the original, absolute cause; either by suffering an extravasation of blood, or simply by not carrying off the conjunctive particles, the nuclei to each other before they are become

come considerable in size. Should those blood globules meet together before they meet with stony particles, they will, by forming themselves into a larger bulk, become the nidus of a stone.

That a stone would likely be the consequence of an immediate union of the blood globules on their exit from the vessels, is highly probable, since, as in all nature beside, they must have a stronger affinity to each other, than to the particles of stones.

A due attention then concerning the cause of the disease, may very much guide and influence our conduct in the means we may pursue to prevent its return, which information may be gathered from the nature of the attack, and from the progress of the disease itself.

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It is not possible to say how large a stone would grow in the body, provided the patient could live under the torture. They would undoubtedly continue to encrease as long as the bladder could perform its office, or the patient be kept alive. We know there have been some cut out of the bladder so large, as to measure eleven inches round, weighing seventeen ounces, or more : and in the Hôpital de la Charité is a stone, which weighed, when first extracted, fifty one ounces.—All stones become considerably lighter, when exposed to the open air.

I shall now reduce into one view, the causes of this lamentable disease, drawn from the foregoing experiments, observations, and reasoning, and hasten to treat of the most effectual means hitherto known of removing it, and preventing its return. The weakness of the vessels or first efficient cause may bring about
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the disease two ways, one of which is, by suffering an extravasation of blood to take place, or simply by their inaction letting the primary particles run into those before-mentioned concretions to such a degree as to render their passing the excretory tubes uncertain or improbable; for tho' in the urine of all persons the particles are never at rest but in a state of motion and aggregation, yet if the vessels are in a healthful state, the concretion may never proceed so far as even that the collected particles shall become visible in any degree whatever.



S E C T. V.

OF THE STONE IN CHILDREN.

From the early age in which many children have been attacked with this disease, some authors have been induced to

to pronounce it hereditary; but when the former premises shall have been duly considered, it cannot surely be said to be the case.

Authors who have alledged the cause of the stone to be a too free use of malt liquors, and those who imputed it to an error of the non-naturals, were obliged to pronounce the Stone in children hereditary, otherwise they would have contradicted themselves; because stones have been cut out of the bladder of children, who had but just been weaned from the breast, and who had been fed on nothing but milk. Children, in this state, being attacked with the Stone, is an undeniable proof of those primary particles of stone being inseparable from every fluid we drink.—When we consider the many glands the milk (with which the child is fed) is strained through ere it reaches its mouth, and the many different

When these fermentations and depurations it has
 undergone, and yet find it to be then the
 vehicle of earth, what can we ex-
 pect from all the filtrations and distil-
 lations of water; it is really wonderful,
 but it is equally true, that a stone as
 large as an almond has been extracted
 from a child of two years of age, who
 had lived entirely on a milk diet.—The
 concretion in such young subjects must
 be considerably expedited by their supine
 position. The bladder is not so likely
 to empty itself in an horizontal, as in
 an erect posture. If the bladder already
 contain sand or earth, nothing is so like-
 ly to assist its formation of the stone as a
 sedentary life. This is evidenced in the
 great number of clergymen, judges, &c.
 who are troubled with the Stone, and
 who sit a great deal, and in every respect
 take but little corporeal exercise: they
 are, moreover, obliged frequently to op-
 pose the excitations of nature, by retain-
 ing

ing the urine till the bladder be distended beyond due bounds; so that it loses its *elasticity*, and becomes unable to contract itself sufficient to emit all the urine.



S E C T. VI.

OF THE SYMPTOMS OF THE S T O N E.

It has already been shewn, that the gravel and stone are the same disease in a different degree, consequently, what is only the gravel now, may, in two months time be the stone. The only line of discrimination between them is, that while the collected particles are still small enough to pass from the kidneys to the bladder, and from the bladder through the penis, without preternaturally distending the ureters or urethra, the disease may be called the gravel; but as soon

as the calculi have acquired a size too large to be admitted through those tubes, naturally, the case may immediately be pronounced the Stone. It can no longer be called gravel, when the piece or pieces of calculi are to be felt by introducing the *sound* into the bladder, though it does not follow that the Stone shall always be found by that instrument; for it may be so small as that its resistance to it shall not be felt by the nicest finger. It may also, by the particular structure of the neck of the bladder in some persons, lie so concealed, as to elude the search of the most experienced operator: hence the reason why, at sometimes, it may be felt by the catheter, at other times not: However, very often the sounding will be likely to afford some satisfaction, and may, in most cases, be said to be necessary, except when the stone is of such a size, or of so long a continuance, and the symptoms so indicative

cative, as to leave no room to doubt of the disorder.

It has been said, that in very rare cases, bloody water may be occasioned by the gravel only; in *this* disease, however, it will be a leading symptom, attending a too violent motion of the body, as riding on horseback, or in a coach on rough roads, and in uneasy carriages.—Too much walking, or any sudden distortion of the body will bring it on, and whenever this happens, the patient may certainly conclude that he is unfit for exercise, but of the mildest kind; and although the laceration may not be discovered during the motion, yet it is unsafe. Ulcers are generally the result of repeated excoriations of the internal coat of the kidneys and bladder. The cause of an ulcer should more particularly be avoided, as it renders the disorder much more difficult of cure; and if it happens
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in a person of a bad habit of body, it generally drags him to the grave; the stone serving to augment the dire effects by its continued friction a irritation against the defenceless, corroded vessels. By its stimulus also, about the neck and sphincter of the bladder, it will occasion frequent irritations, and calls to make water in small quantities; and as it advances in size, a pain will be felt in the neck of the bladder the moment the urine is made, and about the end of making. By a kind of sympathy a pain is felt also at the *glans penis* or nut of the yard, the moment the urine is made; and if the stone be rough, the pain will be exquisite, by the contraction of the neck of the bladder. If the contraction be sudden in the emission of the urine, there will be also felt an uneasy sensation in the *anus*, occasioned by the contiguity of the rectum to the neck of the

G bladder.

bladder. The stone will often be carried by the efflux of the urine to the neck of the bladder, and suddenly stop its course while running, till by a change of posture of the body, or by the natural contractile power of the ligaments of the bladder, it be drawn back, and the urine suffered again to run out.—If, after the first flow of urine, there should be a second urgency to make it by drops, the pain will be immoderate, and of longer continuance. In general, it will be found that the urine may be made easier lying on the back, or on one side, and on any curvature of the body, than in an erect posture.—When the stone has acquired a considerable size, it will be sensibly felt by turning hastily in bed, from side to side, and its gravity will occasion a pain in that part nearest the os pubis, and even in the scrotum and testicles; and a tenesmus, or a seeming

want

want to go to stool, will sometimes be excited at the times of making water.

These are the common symptoms of the stone in the bladder; some, or all of which, attend the disease in its different stages; but it is plain, that if the stone be but small and smooth withal, the symptoms and pain will be milder than if large and rough.—If the stone attack a person of a feverish habit, he will be frequently liable to violent fits of it, attended with such strangurious pain as will occasion an almost incessant desire to make water, and that by drops only. It will also bring on raging thirst, and even delirium. These are symptoms that must be palliated by balsamics, warm bath, and if the habit be plethoric, venæ section, to the quantity of seven or eight ounces, and repeated as occasion may require. Cooling laxatives are also

proper; as manna and oil, with barley-water and emulsions of almonds. A person of a warm temperature of body should abstain from all inflammatory things, keep his body rather loose than otherwise, and particularly avoid violent exercise.

If the case be that of the stone in both bladder and kidneys he will, beside the foregoing symptoms, be liable to the following ones, which are peculiar to the disease when in the kidneys: viz. a dull obtuse pain in that region of the loins where the kidneys are attached, together with a sense of heat and uneasiness after motion;—an uneasy weight and pressure in the part after a full meal, which will often occasion a nausea, and even a vomiting;—in general, the patient will conceive an aversion to exercise from the uneasiness that accompanies it.—The
stone

stone when seated in the kidneys, (as well as in the bladder,) is liable to lacerate the smaller blood vessels, and occasion a discoloured or bloody water, which, if made fresh after the extravasation, will be florid ; but if it be retained some time in the body, it will acquire, by means of the urine, the colour of coffee-grounds.— Inflammation will also be frequently excited in the kidneys, which will impede the secretion of urine ; and if it happen to *both*, at one time, will be dangerous.

The wisdom of Providence is peculiarly conspicuous in the provision made against the consequences of this dreadful disease, by furnishing the human body with two kidneys ; since it is now proved, that one would be sufficient to secrete the urine from the blood. I was present at the dissection of the body of a man, at Mr. Clarke's, that had but one kidney :

it was examined by several surgeons, who all agreed, that his death could not have been hastened on that account.

Though the stone in the kidneys may be more difficult of cure, from its not being surrounded with the urine, yet it is not so immediately dangerous; since a kidney has been found entirely blocked up with the stone, insomuch that, when taken out of the pelvis, it appeared like the trunk of a tree, with the branches severed a little distance from its main body: This is supposed to be the situation of a kidney of a Nobleman of the first distinction in this kingdom.

We find that the pelvis of the kidney though naturally small, is capable of great dilatation; which accounts for the dulness of the pain there, during the growth of the stone.

Women are much less liable to the stone in the bladder than men, from the more favourable structure of the passages of the urine; they are, nevertheless, frequently attacked with this disease in the kidneys; the symptoms of which cannot but be the same as in man, allowing for the difference occasioned by the more active life one leads over the other; consequently the former will be more subject to inflammation.

CHAP. IV.

OF THE DIFFERENT DEGREE OF DENSITY IN STONES.

IT has been shewn in the instances of sections of stones, that they are not only liable to be very different in their textures, but that the different laminæ of the same stone will be of different degrees of cohesion. This accounts for the reason of the irregularity of the discharge of earth during the operation of the Solvent *, as the *outside* laminæ may

* A newly discovered Specific for the cure of the Stone, hereafter to be mentioned.

be less firm and cohesive, consequently, the solution or separation of its parts will be more quickly brought about. The *second* may be denser, and therefore it will not be operated upon so soon; the *third* may again be like the first, and so on. This being the case, it is worthy our consideration what is the occasion of this change in the habit, so as to effect the formation of a *harder* or *looser* compacted Stone. According to our success herein, we may be able to lay down a rule or regimen for those who are either under the influence of the *present* disease, or are fearful of an attack.

I believe no one who has read the foregoing part of this Treatise, will be unconvinced that the same earthy particles are conveyed to the urine of every person whatever, in nearly an equal degree, according to the quantity of fluid received in the body.

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To account, therefore, for the difference in the colour and density of the same stone, it behoves us to consider, that there are *two* or more kinds of primary particles of stone; the one spherical or globular, the other of an oblong figure, inclining to a flat. Now, as it is highly probable also, that the smallest particles seen by the very best microscopes, are still manifold aggregates of those simple particles, we can do no more than judge of their *first* figure by the shape they assume in the state they are first visible. The harder stones, as crystal, are found to be made of fine *striae* or *lamellæ*, nearly equal to each other: when, therefore, these lamellæ meet or enter into contact (from what cause so ever) in a sufficient quantity, the conformity or regularity of their separate figures determines their arrangement equally in the whole, and leaves the homogeneous body transparent, by reason
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of its admitting a free passage to the rays of light equally every way.

From what has been just now said, we may account for other stones being opaque and porous, in proportion as their component particles approach nearer to a globular figure. If a stone be made up of both kinds of particles, it will be of a mixed nature, neither transparent nor fully opaque. Stones of the human body, however, never approach to a perfect transparency, owing to the quantity of fixed salt contained in it. Salt tends to increase opacity, unless it has undergone a heat sufficient to vitrify it. The particles of all kinds of sand, when viewed through a microscope, appear pellucid; so that the colour of human stones being lighter or darker, seems to depend upon the quantity of ammoniacal salt contained in the urine, which serves to fill up the interstices between each lamellæ.

lamellæ. The cloſer and firmer the coheſion of theſe particles is, the lighter is the colour of the ſtone, and *vice verſa*.

If we conſider the nature of light, and the manner in which the rays are refracted and reflected by ſaline bodies, conformable to Sir Iſaac Newton's Experiments, we may eaſily enough account for the variety of colour of Stones, according as they abound more or leſs with ſalt: hence the reaſon why a ſtone, or one or more laminæ of a ſtone, are different in colour from the reſt. It is not however to be underſtood that the ſaline part of the ſtone has no other than the *mediate* property of giving transparency or opacity to ſtones, according as it more or leſs abounds: it obſorbs air, either fixed or rarefied, more than all other bodies. Now if a Stone contains a greater quantity of fixed air, its particles will be kept farther aſunder; conſequently, the rays
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of light cannot pass freely out of one particle into the other, but are in part, refracted by the air, which is a denser medium than light itself. Hence the reason why the most transparent and brilliant glass becomes opaque when reduced to powder, owing entirely to the component particles of it being separated farther from each other, and admitting the air between them, which cannot be excluded again but by a violent fire.

To prosecute this matter to the utmost extent, would be to run through the different doctrines of light and air, and consequently swell the work beyond its intended compass; neither could it be proper in this place, as the present treatise is intended to serve the purposes of defining the causes, and cure of the stone, not to give rise to new conjectures. However, as I have made several experiments

ments on stones, the result of which may tend to throw some new light upon the nature of air, gravitation, and attraction; I may be prompted hereafter to publish them separately.—I shall content myself for the present, with collecting from these experiments, what regimen will be most compatible for those who take the Solvent, with a view of dissolving the stone. This requires a two-fold consideration, the first; what is consistent with the disease itself, the next; what is least likely to frustrate the operation of the medicine intended for its cure.

In order to be more particularly successful herein, I made a number of experiments of the nature of those in chapter vii. with a mixture of solvent and different juices of animal and vegetable substances, kept in a proper degree of heat, in which were infused different pieces of a calculus of equal weight and of
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the same stone, which was cut from a boy of eight years of age, that appeared of an uniform consistence throughout. This was made choice of as preferable to one taken from a man, the laminæ of which might differ in cohesion from his variety, or change in his manner of living.

It may be asked in this place, how it comes to pass that since the urine is incessantly charged with the stony particles, the concretion goes on so slow at one time and so rapid at others.—To which I answer, that a variety of circumstances may concur in the one person, or at one time, to bring about an hasty accumulation, and which in others may only operate in part.—First, for instance, should a stone be already formed in the body, and the urine be retained a very considerable time, there is no doubt but the earthy corpuscles will be more
generally

generally attracted by the stone ; so that the longer the urine be retained in the body, the more likely is the stone to increase.— But this is not the case when a person is under a course of medicine for its cure, because that medicine must prevent the urine from giving out the principles for the stone's accretion ; and unless the urine were detained in the body, it could not sufficiently impart its property to the stone so as to reduce it.

Another cause of the various degrees of growth of stone may be deduced from the following observation. Although there is at all times an aptitude in the primary particles to enter into cohesion, yet there must be an interposing medium, which medium is proved to be a saline substance ; now that this saline substance is to be found in greater abundance at one time in the urine than at another, is
a fact

a fact and therefore the corpuscles of stone may be more or less furnished with this necessary medium according to the state of the constitution.

It may be remembered, that I have more than once remarked, that scorbutic habits have generated stones quicker than others. This may suggest to some a plausible reason for living in such a manner as to deprive the fluids from affording this animal salt in any abundance; but when we consider that a certain quantity of it is necessary to the well being of the whole, we might by following the dictates of this reasoning in too scrupulous a manner, destroy the action of the fluids upon the solids and bring on leucophlegmatias, dropfies, and other disorders more immediately alarming in their natures, especially as such a course must be long and tedious to produce any effect in the disorder of the stone.

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Lastly,

Lastly, since the primary particles of stone are different in their figures, should the first junction of them be of the nature of the lamellæ before mentioned, the nucleus, or first foundation, will be of the harder kind throughout that lamina; as these particles have, no doubt a greater affinity to each other than to other particles.—As soon then as one lamina is compleated, the concretion is at liberty to begin a new lamina, either of the same nature of particles, or of those approaching to a spherical figure according to chance. If of the latter, this second lamina will be less compact and dense, consequently more easy of solution;—So that each lamina must preserve an uniformity of cohesion and texture although the whole stone may be diverse in this particular. If it were to happen that an intire stone was made up of those former particles, it would be hard indeed, and in its nature dreadful.—This, however,

ever, is scarce likely to happen in the human body, from the continued motion of its several parts:—But in stones of the earth it is different, as no motion there is likely to interrupt the natural and specific force of attraction, that one particle exercises towards another of the same intrinsic property.

CHAP. V.

SECT. I.

OF THE METHODS HITHERTO PURSUED IN ENDEAVOURING TO CURE THE STONE.

THERE is no doubt but the disorder we are treating of had its origin with our first fathers, since no climate nor manner of living can grant us an immunity from it.—As soon therefore, as its nature became in part known, by means of that prying and restless curiosity ingrafted in man, it was looked upon as preternatural and owing to some extraneous body having found its way into the habit. This opinion was seemingly

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corroborated from there having been found foreign substances in the heart of trees, stones, shells, &c. so that without considering fully the nature of its composition and accretion, expedients were formed for relieving the unhappy creatures afflicted therewith. Pharmacy was but little known in those days, and surgery, and operations were their only resource, these being of very early date.— We have nevertheless, no account of the operation for the stone till the time of Celsus, though it is more than probable lithotomy was performed long before.

However, imperfect his method might be, it was pursued till after the time of Johannes de Romanis, when no doubt the ill success and fatal consequences attending it, suggested the idea of improvement.

That scarce one in twenty escaped the operation is evident from the forms and ceremonies observed before the knife was applied; insomuch that the miserable victim was considered as doomed to destruction. The work was, therefore only justified upon this ground, that his torments were worse than present death; for in those days the patient derived not the least consolation from palliative remedies. As the mind became more and more enlarged and expanded, every means were devised for lessening the fatality of the operation, and new instruments and new methods of applying them were invented, till at length by the several improvements and the dexterity of the operators, it was brought to an amazing degree of success, insomuch, that at this day lithotomy is not apparently, susceptible of farther improvement.

Now, though this was the real case, and that some wonderfully survived the
stroke

stroke of the knife, yet many were rejected as improper subjects for its decision, since a proper age, habit, &c. were requisite to derive from it any hopes of success. Humanity, therefore, dictated the necessity of seeking relief in medicine for those who were by no means likely to meet with it from the instrument; accordingly we find chymists and philosophers at work in analysing the human calculus. In its decomposition it was found to yield a considerable quantity of fixed air, which, from the result of some of their experiments, was deemed the principal cement of the stone. On this account lime water being judged most likely to deprive it of that fixed air, was in consequence recommended in this disease by the first and ablest physicians. Soap, also, as an universal dissolver of animal substances was called into aid, and, by some, was prescribed and at the same time even taken with

lime water. Indeed the experiments with lime water on stones out of the body gave great reason, to hope success from its internal use; but from the repeated secretions and fermentations it passes through in the body, its nature is so changed that it has no material power to act on the stone when arrived in the bladder.

I shall adduce two of the cases quoted by an eminent worthy physician to favour their operation and effects, and leave the judicious reader to form his opinion from the consequences produced.

It may be urged in reply, that granting these cases do not convey any very favourable idea of their power, yet they are instances of their not being so noxious to the constitution as they are reported, to which I answer, that the constitutions of men differ very materially; that to some you may administer the most drastic medicines

cines with impunity; but these examples are by no means sufficient to overturn absolute, established facts.

That soap is a great destroyer of animal substance is evident from the bloated, fallow countenance, offensive, cadaverous smell of the breath, and bad digestion of those who are under a course of it, and from the history of the plague of London; as soap-boilers, washerwomen, and all those who meddled with soap, were found to die sooner, and with more visible marks of putridity than others. With them, all alexipharmics and antiputrescents were thrown away; none of them escaping. Every effect shews that soap has this destructive tendency, and that it breaks down the *crasis* of the blood; for which reason, it is absolutely forbid in all diseases tending to putridity. To demonstrate this more sufficiently, let a piece of flesh, such as beef,

beef, or mutton, (ever so newly killed,) be immersed, or suspended by a thread, in a bottle half full of water, in which a small quantity of soap has been dissolved, and let the bottle be placed in a warm situation ; in fifteen hours, or, if the weather be hot, in less time, it will begin to throw up air bubbles ; and, in fifteen hours more, will emit a putrid stench, and bear all the marks of an approaching dissolution and putrefaction : if the mixture be kept by the thermometer, of the heat of blood, the corruption will take place much sooner.

It is very rare to meet with a person who has taken soap a very long time, but as the case of a person in a conspicuous situation of life, is wont to make a greater impression on the minds of the public than that of others, I have selected the two following as most likely to answer that purpose.

THE CASE OF HORACE WALPOLE,
Esq; afterwards LORD WALPOLE.

His Lordship was taken suddenly ill when at Hampton Court. His case being, by his physicians, mistaken at first for the cholic, he was treated accordingly; but in a little time a stone was observed to pass through the left ureter into the bladder, which, for the present, gave him perfect ease.—Some time after, by turpentine glysters, and internal lubricating medicines, it was evacuated through the urethra, being about the size of a barley corn.—Notwithstanding, he was frequently afterwards troubled with gravelly complaints, for which he took Cream of Tartar whey, and great quantities of mucilages, which, though they kept him tolerably easy for two years, were found, nevertheless,

theless, to increase the accumulation of the stone: for at the end of that period being in the house of a friend, he had a sudden and urgent inclination to make water, when he was greatly surpris'd to find that the bason contained a pint of almost clear blood, which he had made with the greatest pain he ever felt. This convinced him of the inefficacy of his former regimen, and he resolv'd to be founded; when, the stone being found, he was immediately put under a course of soap.—Accordingly (July 1748) he began, and took an ounce of it every day, together with three pints of lime-water, which he continued to do till the beginning of the year 1757; from which it appears, that his Lordship took no less than one hundred and eighty pounds weight of soap, and twelve hundred gallons of lime-water! a quantity so prodigious as might stagger the faith of any one, if not authenticated by his own hand

hand writing, and farther corroborated by the testimony of Sir John Pringle, F. R. S. in the Philosophical Transactions.

With what little success his Lordship took these nauseating medicines for so long a time may be learned from the continuation of his case. It may reasonably be presumed, that so sensible a man as his Lordship could not be prevailed upon to continue in that disagreeable course, if he had not believed they were the only medicines that could be of advantage to him, and if he had not been flattered to the last with hopes of a cure. It is from this we find that he was elated with joy whenever he could bear the motion of his own carriage, which, however, he could do but very seldom, although of the easiest construction. He was obliged to have a litter made for the purpose of carrying him to town from his seat at Woolterton, which
 journey

journey took him up five days, though but of one hundred miles. He was all this time debarred the use of his ordinary food, and every other enjoyment of life, in order to assist, as much as possible, the power of the medicines.—He died, however, in that year, without any particular cause of his death being assigned by his physician and apothecary, though they both gave their opinion that he did not die of the stone.—Mr. Ranby and Mr. Hawkins were present at the opening of him, and found in the bladder, *three* stones; two were about the size of a Spanish nut-kernel, the third smaller, which seemed to be a part broken off one end of the largest stone: and, in a letter from Sir John Pringle to Doctor Whytt, they were described to be smooth, and of a polish as fine as a boy's marble.

Although the above case was looked upon as one of the most favourable resulting

sulting from the effect of soap, yet I hope the reader will agree with me in the following particulars: that there was but little reason to suppose the stones were wasting, as there was no discharge of sand nor fragments of stone; and although his Lordship might have intervals of ease, it was nothing more than could be expected from his low, temperate diet, and abstaining from much motion. Besides, it must appear very strange that the stones should have been of that size at his death, since he began to take the soap and lime-water as soon as he found any symptom of the disease. Neither can it, with the least colour of reason, be supposed that the accumulation could have reached so far without his Lordship being apprised of it: whence it follows of course, that, in spite of the enormous quantity of those reputed lithontriptics, the stones continued to augment.

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It was remarked by those who advised his Lordship to take the soap, &c. that the smoothness of their surface must have been occasioned by the effect of the medicine. This, in my opinion, is not at all probable; it might with more propriety, have been imputed to the friction of the stones one against another, which we well know will produce the like effect. This is also the only way of accounting for his Lordship's ease at intervals, since soap and lime-water, so far from effecting it, do generally inflame the internal coat of the bladder, and render it necessary to give great quantities of milk, broth, &c. as a defence against them. The only tincture of reason for adverting his Lordship's case as a shew of any good quality of the soap, must have been owing entirely to the temporary ease he enjoyed: but I am inclined to believe that what I have just advanced upon this head accounts for it in a much more

more rational and satisfactory manner. As no certain cause is assigned of his death, it would appear reasonable to conclude, that he died of a gradual depravity of blood and juices occasioned by the soap, as in the case of a marasmus. This opinion is consistent with the established and well known effects of that medicine, when long continued.

Although the case above related will, without doubt, be sufficient to convince the world of the inefficacy at least of soap and lime-water in the stone, yet, as that of Mr. Hay's is still more remarkable, from his having taken it in larger doses, I cannot omit quoting it; nor must I forget to mention, that the very writer of it had then an opinion of soap and lime-water as lithontriptics.

In the following case mention will be made of a Mrs Stevens's medicine, it

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therefore cannot be thought improper in this place, to acquaint the reader how it came to be so much known.

That the world in general, and the legislature in particular, thought a discovery for the cure of the stone of the highest importance to mankind, is evidenced, in the parliament voting Mrs. Stevens, in the year 1739, 5000*l.* for disclosing her medicines against this formidable disease. This was done in consequence of her petition to the house of commons for that purpose.

But although the virtue of the ingredients of which these medicines were composed, might be such as would justify the account given of them, yet the manner of taking them, together with the regimen to be observed in the administration, were such as rendered them of very little use ; as but few persons were

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able to take them at all, from their prodigious nauseating quality; and even those who did take them experienced the utmost reluctance. For my part, I am amazed that any should ever have had the resolution to take them, for any degree of time, especially since some, after having tryed them, chose rather to submit to be cut, than lead so wretched a life; for they not only cloyed the stomach, by almost filling it with their bulk, but also occasioned, by their heat and acrimony, painful sensations, and excoriations of the passages.

I have by no means drawn a more unpleasing picture of these reputed lithon-
triptics than they deserve. The facts are well known to all those acquainted with their nature; and too well by such as have experienced their effects, which circumstances have been the sole means of destroying the reputation of the medicine,

and of bringing it almost into disuse.—
The description of their virtues is, in a
measure, accidentally involved in the
subsequent case of Mr. Hay, who equal-
ly experienced, at the same time, that of
the soap and lime water.

THE CASE OF
WILLIAM HAY, Esq. *

Being an extract of a letter from Dr.
Ruffel, of *Brightbelmstone*, to *Henry Pel-*
ham, Esq. communicated to Dr. *Whytt*,
by the late Rev. Dr. *Stephen Hales*,
Clerk of the Closet to her Royal High-
ness the Princess of *Wales*.

“ *November 25th, 1755.*

“ Mr. Hay took three ounces of Mrs.
Stevens's medicine in a solid form every

* Author of *Deformity*, an Essay.

day

day for five years, never leaving off, except for a few days, to observe the effect of the medicine.

“ About five years ago he left off the use of these medicines, and afterwards pursued, with the same constancy, the use of castile soap and lime-water, mixed with milk. At first he took three ounces every day; but about two years before his death, he reduced the quantity to one ounce. Under this method he grew so easy, that riding in a coach, or walking, seemed to give him but little pain. This inclined him to get on horseback, which he had not done for eleven years: but he found an inconvenience from it the first time, and after the second time (which was a little before his last illness) he was heard to complain that his old distemper was likely to return again as before. He is reported to have died apoplectic,

plectic, having neglected to use the necessary evacuations.

Two days after his death, Dr. Ruffel was desired to attend the surgeon on taking the stone out of the bladder, which was empty of urine, and grown quite callous from the stones rubbing against it.

The stone weighed three drachms, two scruples, and eight grains; was flattish and oval; of a shining chefnut colour, perfectly polished and smooth to the touch in every part. The outward laminae were separated, one of which was thick and friable, the other still thicker, and of a brown loam colour, as well as the stone to which they adhered; and was daubed over with very rough asperities.

From this short account of Mr. Hay's case, the doctor observed that Mrs. Stevens's

Stevens's medicines, or soap and lime-water, may give relief to patients, and make them pass through life easier, even although they should have little or no effect in dissolving the stones:" and as Mr. Hay, as well as the bishop of Landaff, continued to discharge red gravel in spherical pieces, he remarked, that that gravel seemed to be what is generated in the kidneys, where consequently the lime-water, &c. have no power; though he thinks they will hinder the gravel when fallen down into the bladder, from uniting or growing into a stone.

From the above declarations, it appears, that the doctor began to doubt their power in dissolving human calculi, as they certainly had the fairest trial given them in the above cases, as well as in that of the bishop, and many others. The case which Mr. Hay received in the latter part of his days,

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when

when sitting still, does not seem to have arisen from the effects of the medicines, as the doctor confesses that the stone was hard and smooth, which smoothness was certainly owing to the violent friction of it against the sides of the bladder, the latter having at length become callous by that means, and, consequently, less susceptible of pain

This case, as well as the former, could only have been selected on account of the ease which, at times, Mr. Hay enjoyed, and which, I think, is as fully accounted for by the smoothness of the stone, together with the neck of the bladder having become callous. There is also the same reason to believe the stone increased in size in this as in lord Walpole's case, because, as soon as it was discovered, Mr. Hay began a course of Mrs Stevens's medicine.

SECT.

S E C T. II.

OF THE EFFECTS OF LIXIVIUMS.

The fallibility of drawing conclusions of the effects of dissolvents, from the power they exert on calculi out of the body, has already been proved, since acids as well as alkali's will dissolve a stone by their corrosive quality.—The stone is of so alarming a nature, and so dismal in its consequences, that I do not wonder the unhappily sufferers should seek succour in any medicine that promises the least shadow of relief.

However lithontriptic the soap-leys or lixiviums may be, the fatal effects their internal use produced on Lord Orford, might,

might, and will be, a memorable record of the danger to which the afflicted are exposed, who biassed with the flattering hopes of a radical cure, find the remedy full as bad as the disease

CHAP.

C H A P VI.

S E C T. I.

OF A REAL CURE FOR THE STONE,
BY A NEWLY DISCOVERED SPECIFIC
SOLVENT.

ALL those who have so peremptorily asserted the stone incurable, must have known very little of its constituent principles. They must have looked upon it to be of one uncompounded nature, immutable as its primary particles: yet they agreed, that it was possible to prevent the urine from running into further concretions, which is, in fact contradicting

dicting themselves, and allowing it curable, though in a slow degree.

That a medicine should prevent the urine from giving out those principles which form a stone, and yet not act upon the stone itself, is not intelligible to me; however, if a medicine shall, as Dr. Whytt observes, by destroying the petrifying quality of the urine, hinder any new accretions to the calculus, it must necessarily, in time, have its surface washed down, and worn away by the urine (now rendered more simple) continually running along it, and the coats of the bladder acting upon it on all its sides;

*Quid magis est saxo durum? quid mollius unda?
Dura tamen molli saxa cavantur aqua.*—Ovid.

The primary particles of earth, so often mentioned as attracting each other
in

in the formation of a stone, never fail to take up certain other relative principles as a *medium*, not only to assist in their junction and cohesion, but as necessary to fill up the interstices formed by the apposition of those irregular figured particles;—without which medium they certainly could not form a concrete substance in any degree tenacious. Now if a medicine is formed, which, by its affinity with one or more of those principles, deprives the stone of that one or more principles, will it not destroy the tenacity of that stone and render it liable to fall into powder, or moulder away by the common attrition of the urine? And is not that medicine as perfect a dissolver of the stone as *aqua fortis*, or glauher's spirits of nitre, since they do no more than destroy the tenacity of it, without being able to change the nature of its component, primary atoms.

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That there is a specific property in several fluids, is what no sensible man will deny. It is, what has been always understood by the term affinity, and is manifested in the simple experiment of dissolving a lump of sugar, the most natural menstruum of which is water: for, if alcohol or brandy be poured upon the sugar it will not be so readily dissolved. Again; resins are soluble in alcohol, but not in water;—and so on of many other specific menstrooms, well known to all those who are in the least acquainted with that part of chymistry which relates to the doctrine and laws of affinity.

That there is also a property in some medicines of operating locally, or, as it were, on part of the body, or on one of the fluids of the body, without affecting the whole, the greatest Caviller must allow; and every day's experience
furnishes

furnishes facts for its confirmation:— witness, the effects of cantharides, and mercury, of which mention has been made heretofore.

It being clear then that there is a specific power and local effect in several medicines (and unless it had been so, I had spared myself much pains, and had not troubled the world with these effusions of my pen), it only remains to shew how far these operations take place in the administration of this Solvent, so as to answer the end of disuniting the principles of the stone, and thereby exonerating the body from its disease.

The chymical elements or principles, to which all bodies may be ultimately reduced, are these five: 1st, *Water*, or *Pblegm*: 2dly, *Air*, which escapes unseen in great quantities from all bodies, so as to constitute half the substance of some
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of them: 3dly, *Oil*. 4thly, *Salt*, which is either *volatile*, or *fixed*. 5thly, *Earth*.

Seeing then, that the natural elements are thus blended together in the formation of a body endued with tenacity, of what consequence is it whether, in order to decompose and destroy its adhesion, we deprive it of either the water or air, the oil or the salt; or whether we resolve the earth itself into air, as Dr. Priestly proves may be done; since it will be equally disunited in excluding from it any one of its principles or elements, Although it is said that *earth* may be converted into *air*, conformable to the above learned philosopher's experiments, no doubt by that is meant, that the earth is resolved into its primary particles, which primary particles may be, and in fact are, lighter than the particles of air, otherwise they could not be borne up by the air.

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That this is the case is demonstrable in a quantity of earth which may, by a chymical process, be collected again from the air. But although by the help of chymistry we can resolve bodies into their pristine, constituent principles, God has here put a *ne plus ultra* upon our labours; otherwise were we able to alter or annihilate the first principles of bodies, we should undoubtedly create great confusion in the order of things.

It should therefore seem plain, that although in the strict philosophical sense of the word, there is not in nature a dissolvent, as is demonstrated in the case of water with sugar, (for the water does no more than act upon its medium, the saccharine particles being left unchanged as from the beginning, and may as effectually be collected into a mass again; as is every day proved in the house of a sugar-baker,) yet, whatever decomposes

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the constituent parts of a solid body, or resolves it into its primary particles or atoms, has a right to that title, according to the modern acceptation of the word. —Salt is not only a predominating principle of the stone; it is also the cement of other compositions, as glass, mortar, &c. Now we all know, that if the lime with which the mortar is made should be deprived of its salt it will be no longer fit for the purposes of building; for although it should be mixed with sand, and tempered as in the usual way, it will never become firm, but continue a calx, which, if used to build with, would expose the work to be blown down by the slightest puff of wind. The adhesive property may, nevertheless, be given to it again by the addition of a *fixed* salt: hence the reason, why mortar made with sea-water is more durable than any other. This circumstance threw out hints which contributed not
a little

a little to my success in this discovery. That the Specific Solvent operates upon more than one of the principles of the stone, is deducible from the hasty solutions of some stones by its use. Indeed, the diversity in the quantity of the several principles which compose the stone, will be a cause of its operation varying as much as the difference in the nature of the primary particles themselves.

I believe it would be thought superfluous to draw any comparison between the innocent operation of the Solvent, and the remedies hitherto proposed for the cure of this disease. The many successful trials of it for these five years render that altogether unnecessary, especially as during that time, it has frequently been administered to very young children.—And I have only farther to add, that I am firmly persuaded a person might take it

his whole life, even though no stone existed in the body, without being injured by it in the least, as to his constitution. Indeed nothing can prove its superior excellency and benign efficacy over the forementioned lithontriptics, more than a brief abstract of the many cures performed by it, from which I have selected the few following.

CASE THE FIRST.

Mr. SAVAGE of Cobham, Kent, had, for five or six years, been attacked with the gravel in the kidneys: he found himself always worst about May or June, particularly if he omitted to lose blood by the lancet, as he was habitually inclined to be plethoric. For the last two years the gravel began to form itself into small stones after which, the sand, he used to perceive in his urine, ceased to come away. He

was

was at last confined to his bed with the most racking torture, from which time if he attempted to use exercise, he found his urine bloody, &c. A clergyman of his neighbourhood recommended him to try the Solvent, and after taking the quantity of three of the largest bottles, he discharged several pieces of concreted gravel and some loose sand. The pain then gradually decreased, and he was able to use exercise; so that he looked upon himself as entirely cured. This happened in the winter of 1775, yet he was *unwilling* to proclaim himself perfectly well, till he should pass the spring, at which period he had suffered greatly by the disease for several years; however, to his satisfaction, he not only passed over those months free from an attack, but has continued so to this day, even without the least complaint of the kind.

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REMARK.

R E M A R K.

The circumstance of the sand ceasing to come off when the concretions began to form themselves, is exactly consonant to what has been shewn in the preceding part of this treatise: nor is it to be wondered, that he always found himself worst in those months, since the habit is then likely to become more robust and sanguinary than in any other season; consequently, the frame more subject to be attacked with feverish spasms from the motion of the gravel.

C A S E II.

THE CASE OF MR. WILLIAM
HARPUR AT THE RIGHT HON-
OURABLE LORD ROBERT
BERTIE'S.

MR. HARPUR had been afflicted with the stone many years to that degree, as rendered

rendered his life at last extremely burthensome, and made him incapable of using exercise, or even any motion without great pain, the stone having acquired such a weight that he could sensibly feel it in his bladder upon every sudden movement of the body, and particularly when he turned himself in bed. It is not possible to describe all the medicines he had been recommended to, and which he had taken without relief. He was at last advised to take the Solvent, which he did to the quantity of three bottles, before he perceived any alteration; but in the 4th or 5th, he was so much easier as to be able to walk about. He also began to discharge gravel and sand, and by the time he had taken as much more, the stone was so far operated upon, that it came away in concave pieces, like broken nut-shells. Previous to his taking the Solvent, he had been urged to make water eight or ten times

in an hour, and with such exquisite torture, that his cries were heard at a very considerable distance ; but, by this time, he could retain his water for three or four hours, and make it with but slight pain. The stone continued to be voided, sometimes in the form of powder, at other times in those shell-like pieces before described, till at length, a round piece (supposed to be the nucleus) passed the urethra, and from this time he dated his perfect cure ; for he could now ride on horseback, sixty miles a day without the least inconvenience. Lord Robert, out of his great humanity has condescended to take infinite pains to make known the efficacy of the Solvent, for the benefit of the afflicted in similar cases.

O B S E R V A T I O N S.

The peculiarity as to the form of the discharge of the stone in the aforesaid cure, is a greater encomium on the Solvent than any thing that can be said; as it plainly shews it does not act by any forcing or irritating quality on the vessels themselves, but from a power of dispossessing the stone of its principles of cohesion. This same effect is frequently perceived in the first coats of the stone, more especially if it be of some considerable bulk.

C A S E III.

THE FOLLOWING CASE WAS TRANSMITTED TO ME BY THE FAVOUR OF RICHARD PHELPS, Esq; OF DUNSTER NEAR MINEHEAD.

Mrs. Barnes of Taunton Somersetshire had been afflicted more than seven years with the confirmed stone,
and

and gravel, to a very violent degree, during which time, she consulted the most eminent in physick, even those who were at a great distance; and although she had taken almost all the medicines common in these cases, she grew daily worse, insomuch that she was at length given entirely up, and her death every day expected. Fortunately for her, while in this melancholy condition, she was informed of the Solvent, and was prevailed upon, even in that languid condition, to begin a course of it. She was soon sensible of ease, and began to discharge some gravel; and being now sufficiently convinced of the safety of its operation, of which before, she had entertained some doubt by the suggestions raised by some physical neighbours, she took the Solvent regularly to the ninth second size bottle, by which time she had voided such a quantity of sand and gravel as could scarcely be credited,

credited, being it is averred, not less than half a pint. By the very favourable discharge of gravel, together with the cessation of many disagreeable symptoms, she had reason to hope her disease was about to leave her; but she was suddenly surprised by an attack of the most acute pain she had ever felt, the irritation of which had abraded and forced away the mucus of the bladder, &c. In this situation she consulted me by letter how to proceed; and as I had not the least doubt but there was a stone endeavouring to pass, I sent her the Solvent in its *full* strength, and advised her to desist from much motion, 'till she had discharged it, or 'till the pain had abated. She took *this* in the same doses as the *former*, and before a third part of the bottle was exhausted, she passed, with very moderate pain, a stone about an inch long, and very near as much in circumference. This was followed by *two* more, very little

little less in dimensions than the former, which very considerably lessened her uneasiness. She continued the Solvent to the end of the bottle, during which time she had voided near a hundred small stones, the largest of which were of an uncommon shape, almost flat, resembling in figure small dried garden-beans. The discharge and pains now entirely ceased, and before she quite left off the Solvent, her urine, which before had assumed every morbid colour and consistence, now became entirely clear; and she recovered her strength and appetite to the astonishment of all those who had known her before.

The progress of this cure is so truly wonderful, that the world might justly suspect its reality, if it was not authenticated by Richard Phelps, Esq; and many other reputable persons in the neighbourhood.

neighbourhood, her situation having been universally known to a great distance.

REMARKS ON THE ABOVE CASE.

The mucilages and anodynes that had, no doubt, been given Mrs. Barnes with a view of blunting her pain, must have been the sole cause of retaining the gravel to that enormous degree: for it appears from her case (and she affirms it) that her kidneys and bladder must have been almost entirely blocked up with gravel and stones.—There are some other circumstances attending her case not proper to mention here, that convince me, her bladder must have almost lost its office, and which makes it certain, that she would have expired, in a short time in the utmost agonies.

Nothing can so clearly evince the benignity of the Solvent's operation so much

much as in its perfect agreement with her stomach, though so exceedingly reduced before.—It may be remarked, that the flatness of some of the stones shews they were formed in the bladder, which, from its different position in the *female* sex, gives rise to that shape: whereas, in that of the three first, there is no doubt but they originated in the kidneys. From the above case, we may, with the strictest candour, conclude, that the Solvent not only removes the present disease of stone, &c. but by saturating the fluids of the body, and restoring the vessels themselves to their natural elasticity, may prevent a future attack: for, although it is two years since Mrs. Barnes's cure, she has not had the least indication of any symptom of the kind. This places the cure itself in a preferable light to cutting, if it could be done even with equal ease and safety; for the latter does no more than remove the *present* effects,

effects, and therefore leaves the patient liable to an immediate *return* of it. Every one's reason must inform him, that after lithotomy, the vessels, so far from being *strengthened*, (should the patient be happy enough to survive the dreadful operation) are *debilitated*, and therefore, they are less likely to exert a resistance to any concretions forming in them.

C A S E IV.

THE FOLLOWING LETTER CONVEYS
THE CASE OF A LADY AT
TWICKENHAM, TO WHOM THE
KNOWLEDGE OF THE SOLVENT
WAS COMMUNICATED BY THE LATE
LADY GEORGE GERMAINE.

S I R,

I was greatly afflicted with the
stone and gravel for at least twenty
years, during which time I voided a
great

great quantity of gravel, but no stone, I was last June seized with violent pains in my right hip and groin. To describe what I felt, is impossible; and till December, I never enjoyed one moment's ease, night nor day, except when asleep, which rest itself was of short duration. I then took your excellent Solvent, which, in less than a fortnight, began to bring away the stone by dissolving it to a fine sand. It is judged, when whole, to have been as large as a pigeon's egg. I took the Solvent but about six weeks, which, with the blessing of God, has, I believe, quite cured me. I have taken none since November last, and yet I continue very well. May God still give his blessing to your medicine, by which, I hope, numbers will be relieved as well as your very humble servant,

Twickenham, *March* MARY LOVE
8th 1776.

OBSER-

O B S E R V A T I O N S.

From the hasty dissolution of this stone, as well as of those of Mrs. Barnes, it may reasonably be suggested, that women derive considerable advantage in this disease from the different structure of the bladder. This last circumstance will likewise account for the reason women are rarely attacked with the disease in the bladder, otherwise their life being less active than that of men, would, were it not for the before-mentioned reason, expose them to it in a more violent degree.

L C A S E

CASE V.

THE CASE OF

THE REVD. MR. FOWKE MOORE,

As transcribed *verbatim* from his letter
to the Author.

To MR. PERRY, Surgeon, &c.

S I R,

I flatter myself it will be unnecessary
to apologize for the trouble occasioned
by this letter, which gives you an
account of the success of your Solvent
for the stone, &c. Enclosed I send you
the state of my case, as I had it printed
in different † news papers, and which
you are also at liberty to make use of as
you please.

I have

† See page 149

I have the pleasure to inform you, that I have had many applications made to me since my cure ; some from persons with whom I was intirely unacquainted, desiring to be informed of every minute particular, which I have not failed to answer. I have taken the utmost pains to do justice to your medicine, which is no more than my duty ; and yet I am largely recompensed for any trouble I have, in the pleasing prospect of being the means of relieving many miserable people, and at the same time, increasing your emoluments by the sale of your truly valuable Solvent.

I hope you will take care to have this kingdom always properly supplied with it ; and I think it would be adviseable to have it in several of our best country towns, particularly in this northern province, viz. Belfast, Derry, Newry, &c. which are full of people.

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I request

I request you to pardon the liberty I take in giving you this advice unasked, as it proceeds from my fellow-feeling for my unhappy countrymen, who labour under that dreadful disorder, and from an earnest desire to be serviceable to you, who have been the happy instrument, under God, of rescuing *me* from the jaws of death.

I should be happy to have it in my power to do you any service, for I am, with great truth and sincerity,

Dear Sir,

your much obliged,

and very humble servant,

FOWKE MOORE.

Ireland, Dungannon,

November 4th. 1776.

THE

THE *ADVERTISEMENTS*.

“ The REV. FOWKE MOORE, of Dungannon in the county of Tyrone, having been cured of a stone in the bladder by the above medicine, thinks it his duty, both in gratitude to Mr. *Perry* the discoverer of the medicine, and in compassion to all those who labour under that excruciating disorder, to publish his case, which is as follows :

“ In the beginning of December last, 1775, he was founded by an eminent surgeon in Dublin, who immediately found a stone of a middling size; upon which, by the advice of physicians, Mr. Moore went under a course of soap-leys, which he continued from the beginning of December, to the 23d of May last, during all which time he had a most violent complaint in his bowels, and

found not the smallest relief from the pain of the stone: he was so emaciated, that it gave him pain to sit without a cushion, and so weak, that he could not step into bed without assistance.

“On the 23d of May, he began to take the SOLVENT, and in a fortnight afterwards, he found a change for the better. From that time he began to discharge gravel, sand, and glutinous stuff in great quantities, which continuing for about three months, then gradually decreased. He has now no complaint of any kind, and is convinced that the stone is entirely dissolved. He has recovered his flesh and his colour, and is able to ride a hard trotting horse five miles an hour. Any person who is desirous to be informed of other particulars, may apply to Mr. Moore in Dungannon.”

Dungannon, Oct. 10. 1776.

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The aforesaid case of Mr. Moore, not only serves to convince the world of the real power of the Solvent in dissolving the stone by a specific quality, but also of its salutary operation. Nothing can more effectually describe it of a nature very different from *lixiviums*, or *soap leys*, than this case; as it is obvious to every one, that, if the nature of the Solvent was in the least tending to those, so far from removing the sickness of his stomach, broken crisis of the blood, and emaciated habit (which were plainly the effects of those medicines) they would have been heightened thereby.

There is not the least doubt if Mr. Moore had continued the use of the Lixivium much longer, it would have occasioned his death : for, when he first began the Solvent, he had written me a letter describing the course he had been under, and desiring to be informed

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whether it would be proper he should continue to take it in that deplorable state of health. As I was confident his former course alone had brought him to that ebb of life, I advised him the more readily to persevere in the Solvent, and gave him every reasonable encouragement thereto. We find he had not taken it more than a fortnight, ere he began to mend of his most dangerous complaints. The bloated and fallow complexion he had described in his first letter, gradually left him, which is an undeniable proof, that the medicine is an antiputrescent, a property, which I flatter myself, the rest of the faculty will do me the justice to allow, could never be ascribed to the medicines hitherto administered in this disease.—This advantage alone, over every other reputed lithontriptic, if they had even an equal power on the stone itself, would be sufficient to explode their use. The soap-leys shewed not the
least

least power of dissolving the stone, since his complaints grew daily worse, and he discharged nothing but mucus. Besides, these corrosive lixiviums never fail to force off the lining of the urinary vessels, and which, I believe, to some unexperienced people who have taken them, has been looked upon as a good prognostic, and from which they have been tempted to call them dissolvents.

C A S E VI.

OF THE RIGHT HONOURABLE LORD
GEORGE GERMAINE,

Secretary of state, and one of his
Majesty's most Honourable Privy
Council.

In December 1774, I was desired to meet Sir John Elliot at lord George's to consult upon his lordship's case, which I found had at one time been treated as a
calcu-

calculous one, at others as a laxity in the urinary gland, and which was supposed to give rise to an extravasation of blood.—Under the supposition of the latter being his lordship's disease, he had been prescribed balsamics and astringents; as *bark*, &c. These medicines, although they removed the bloody water, did not lessen his lordship's pain; on the contrary, his disease was found to grow upon him.—The pain he had suffered was so exquisite as rendered it necessary to administer opiates to a great degree, so that his Lordship has been known to take upwards of a hundred drops of laudanum in a night. His lordship informed me, that at times the hemorrhage of blood was so great, as to threaten the most alarming consequence. It may be supposed, that his lordship had consulted the most eminent surgeons, as well as physicians, upon his situation, which was not deemed the stone, because his
lordship

lordship had not been sensible of having passed any sand or earthy matter in the urine. After his lordship had, in the most accurate manner, related the progress of the disease, I immediately pronounced his case *stone*; and recommended the immediate use of the Solvent. His lordship began its use that day with the greatest readiness, particularly, as he had been strongly prepossessed in its favour, from the accounts he had had of its effects.—I waited upon his lordship the next day, when he told me, that the Solvent had sat perfectly well on his stomach, and that it was rather agreeable to his taste.—In a few days I found his lordship's urine began to assume its natural colour, and the violent pain about the region of the loins decreased.—I waited upon his lordship at the distances of two or three days, until I had the pleasure to hear his lordship was exceedingly mended in health. I had also
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the satisfaction to find a discharge of faburrous matter in the urinal, which removed every doubt of his disorder. This in about a month after, was farther destroyed by the evacuation of a piece of stone; which was exceedingly hard within, and had all the evident marks of having been acted upon by the Solvent.—By this time (which was March) the bloody water had entirely ceased to come away, and only the slightest tinge was observed in it upon any extraordinary exertions or fatigue. His lordship continued to take the Solvent regularly till it was concluded the stone was entirely brought off; but he had suffered such excruciating torture from the disease, that he chose nevertheless to continue taking the Solvent in smaller doses, although the necessity of it was no longer enforced. So partial is his lordship to the medicine, that he continues at this time to keep a bottle in

in the house, by way of taking now and then a dose, although he is not only free from the complaint, but is better in health than he has been for many years past.—His lordship is therefore, to the happiness of all who have the honour of his acquaintance, a living testimony, not only of the power of the Solvent in removing the stone when present, but also of preventing its return: for, it may be well imagined that the part his lordship takes in administration, necessarily exposes him to great fatigues, and such as could not possibly be borne with a nephritic complaint.

The benevolence of his lordship's disposition, prompted him to desire that his case should be published, for the benefit of those who may unfortunately fall under the influence of this cruel disease.

CASE

C A S E VII.

THE CASE OF — ALLANBY ESQ;
 RECEIVER GENERAL OF HIS
 MAJESTIES QUIT RENTS IN
 THE ISLAND OF ST. JOHNS.

Mr. Allanby was seized with every symptom of the stone while in the island of St. Johns, on which account he came over to England in expectation that the operation would be necessary; one of the surgeons he consulted on his disorder advised him to try the Solvent previous to any other step;—he very readily acceded to the proposition and immediately began a course of it in which he regularly persevered till he voided several pieces of stone, after which he evacuated a good deal of fine sand and mealy powder in his urine, in this way

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he continued several months growing easier as the stone diminished in size; for at first he suffered such extreme pain as made him unable to walk or even ride in a coach except with great difficulty; his urine, also, upon any exertion of the body would be at times bloody, and at others of the colour and consistence of coffee grounds, as Mr. Allanby's intention was to have been cut for the stone when he first came over, he had not taken measures for any considerable stay in London, so that I was desired by him to represent his case to his majesty's secretary of state, for that department, in order to obtain permission for his stay so long here as might be necessary to complete his cure.—His majesty was pleased to give him leave for that purpose, and he continued incessantly to take the Solvent in the usual quantity till the pain entirely ceased, and there was not an indication of the least
part

part of the disorder remaining, however he determined still to take it for a time by way of totally expelling any loose sand that might otherwise adhere to the neck of the bladder; as he now remained perfectly well and divested of any uneasiness whatever in the bladder or kidneys, he wished for satisfaction to be founded, so that he might be convinced the stone was totally dissolved, for this purpose I introduced a sound into the bladder, and scrupulously searched therein, when it appeared there was not the least cause to suspect a particle of the stone was left behind, he accordingly omitted the Solvent from that time, and has nevertheless been well ever since although it is now two years ago.

CASE

C A S E VIII.

THE CASE OF A CHILD SEVEN
YEARS OLD, THE SON OF JOHN
RICHARDSON Esq; OF BRAM-
SHOT PLACE, NEAR HASLE-
MERE, SURRY.

This child, at about the age of seven years, was taken ill with a disorder, for which his friends were at a loss to assign a name, as now and then he would be quite cheerful, and at other times very unhappy and dejected, and, under these circumstances, he had a perpetual desire to make water. The malady continued to increase upon him, till at last he cried out violently upon making water, running his hand forcibly into his breeches, and throwing himself upon his belly on the ground, and into

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many

many other peculiar postures. As he was at this time in a boarding-school, the master requested Mr. Richardson to take him home, since he stood in need of great attendance, and did not advance at all in his learning, owing to the extreme torture he sustained. His disorder was now declared to be the stone, and in this deplorable way he was brought up to London to undergo the operation, having tried many medicines in vain. Mr. Wyatt, and Mr. Watson, being called in to sound him prior to the operation, they were convinced of his having the stone; but as the passages were exceedingly inflamed by the sounding, and by the excoriation of the water, from its continually running through them, they prescribed him balsamics and mucilages for a week to prepare him for the operation, to which all parties had consented. Providentially one of his relations proposed calling

ling in Dr. Huck, to take his opinion about the time of performing the operation, who having heard of the discovery of the Solvent recommended it to be tried immediately. This proposition being universally consented to, he was accordingly put under a course of it, with a caution as to his diet, &c. whereby the bloody water, which he had so often made before, left him in about a month or six weeks, and in twice that time he was visibly better, insomuch that he was often several days in perfect ease. Though his urine had always a fine sediment in it, he never voided any pieces of stone; but, previous to his having taken the Solvent, by standing at rest for a few hours, his urine became of the consistence of white of egg, from the great quantity of mucus that was dislodged the bladder by the friction of the stone against its internal surface. In three or four months he was so much

better that he often made water without complaining, whereas, before, he dreaded that natural process more than can be described. He had still recourse to the Solvent, by which he continued to discharge that fine earth till his pain was quite gone, and the stone totally dissolved; so that the only complaint then remaining was a weakness of the sphincter of the bladder, that often occasioned involuntary effusions of water, and sometimes so when he was asleep. For this complaint I ordered him steel wine, the bark, and cold bath, by means of which he recovered of that also; so that by the end of one year the stone was totally dissolved,—the laxity of the bladder entirely removed,—and he was, soon after sent again to the school well, where he has remained ever since, it being twelve or fourteen months ago. It is to be remarked that the Solvent, during the whole time of taking it, agreed

agreed with him remarkably well, though he had before become very much emaciated and weakly in his constitution. His appetite was likewise found to mend every day, which is another convincing instance of the innocency of the Solvent, since, though in so young a subject, and of so debilitated a habit, it never rendered him in the least indisposed, nor made him dislike the taste of it.

C A S E IX.

THE CASE OF JOHN HARRISON
ESQ; OF NAGS HEAD COURT,
GRACE CHURCH STREET, AND
SECRETARY TO THE MILLION,
BANK.

Mr. Harrison consulted me about four months ago for a complaint in the left kidney, which gave him such torture at times as threw him into violent spasms,

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vomitings,

vomitings, and trembling fits, that lasted sometimes twenty-four hours together. He was debarred from almost all kind of exercise on account of a discharge of blood which followed it, and by the continuance of the disorder, and the consequent confinement of it, his constitution, though naturally good, was universally impaired. He began a course of the Solvent which soon restored his appetite, and restrained, in a great measure, the discharge of blood he was wont to have after a moderate walk. He continued the medicine for about nine or ten weeks, during which time a good deal of clayey matter was brought off with his urine, but at the end of that time the stone was reduced so as to be brought from the kidney to the bladder, and by persevering about a week more in the full dose of the Solvent, the nucleus of the stone was voided with his urine, since which time he has not had the smallest complaint

complaint of any kind whatever ; though it is still thought adviseable to take now and then a few doses of it, by way of totally correcting the disposition of the fluids to run into those concretions again.

The publishing of these cures, while they exhibit to view the efficacy of this medicine over all others in dissolving the stone, flattering me not a little for having been the discoverer of it, carries with it, on the other hand, an air of empyricism, which of course must be unpleasant to me ; but, it is worthy to be remarked, that it is a step the public have a right to exact, inasmuch as the disease has been looked on as incurable but by the knife ; or, which is the same thing, that no medicine could safely be taken that would have power to destroy the stone : but, it is hoped, the numbers of cures which, tho' not published here, are, nevertheless, on record, and the repeated proofs of its

entire safety and innocency to the constitution, are sufficient to annihilate such groundless opinions. I would, however, have it to be understood, that I desire no undue praise or merit for the discovery, being willing to submit the test of it to any one or more physicians of candor and judgment, well knowing that such gentlemen will not suffer the usual prejudices against arcanums to counterpoise, for an instant, the consideration of the public good, in a matter of so much importance to the health and life of individuals.—I shall waive many other arguments I might make use of to remove the diffidence any person might still entertain of my real motives for publishing this discovery, since they will come much better from the mouths of those I have had the honour to be known to in consequence of such discovery, or from former friendship.

C H A P.

C H A P VII.

S E C T. I.

OF THE REGIMEN NECESSARY IN
THE CURE OF THE STONE.

WHEN a patient finds himself attacked with the stone, either in the kidneys or bladder, it behoves him to lay aside all violent exercise, especially riding on horseback, as it may endanger an hemorrhage of blood, which, if often excited, would be likely to terminate in an ulcer.—There are those, notwithstanding, who are inconsiderate enough to advise every species of motion, with a view of forcing out the stone: a procedure, however, to which none should agree,

agree, or advis.—It has cost many their lives, while others have thereby incurred incurable ulcers.

It is easy to conceive, that if the inside of any of the urinary vessels be excoriated, the acrimonious water passing through them is sufficient to irritate and keep them from healing.—Much exercise, therefore, can never reasonably be recommended but in a case of the simple gravel, where we are sure there are no pieces of calculi too large to be driven through the passages; nay, even in this case, it is more adviseable to desist from all violent motion.

The most salutary exercise is walking on smooth ground as long as the strength of the patient, or state of the disease will permit. It should never be continued so long as to change the urine to a coffee-colour, nor so as to appear tinged

tinged with blood.—If there be no reason to suspect the stone large, or rough and hard, a gentle motion in a carriage (off the stones) may be allowed: but this will be best judged of by the frequency of making water, and by the pain attendant on the bladder's contracting round the stone after the urine is made.

The intention of cure by means of this Solvent, is assisted in retaining the urine as long as we can, naturally, in the bladder: whence it is obvious, that all violent motion defeats this end by inducing a frequent stimulus to urine.

Our next consideration respects the diet, which should also be adapted to the strength of the patient's stomach. In common cases, unaccompanied with other disorders, it will be sufficient to attend to the following rules; in others, it is presumed

sumed the patient will seek for particular information, as, in such complication of diseases, &c. it may be necessary to make exceptions.

It is compatible with the nature of the disease, and the operation of the Solvent, to incline as much as possible to a milk diet, especially when the stomach is enfeebled, or the whole habit emaciated. It may be eaten in its natural state, or made into porridge, rice-milk, custards, or puddings. There is no fluid less likely to form stony concretions than this; nor any more likely to prevent feverish or irregular heats in the habit, which are great incentives in the stone: but as there are constitutions attacked with this disease, which have been always used to a more unrestrained diet, I have thought proper to arrange a certain number of articles by way of breakfast, dinner and supper, and the patient

patient may be left to make choice of such as best agree with his stomach and inclination. He will, by these means, be prevented from being cloyed with the same food, and, consequently, his regimen will be less severe.

For breakfast, milk, boiled or not ; rice-milk, or milk-porridge ; tea ; coffee, or chocolate, with toast and butter, or bread and butter.

For dinner, plain broth ; boiled fish of all sorts ; any kind of butcher's meat, not salted ; but lamb and veal are preferable, and all boiled meats are more to be advised than roast, though the latter are not absolutely to be excluded ; all kinds of poultry, except geese and ducks ; rabbits boiled or roasted. Of game, the feathered kind are proper to be eaten of.—The prohibition of venison, turtle, and all made dishes with

with strong gravy, must be dispensed with; puddings, particularly of almonds, are highly proper. The following vegetables may be eaten of, with melted butter; *viz.* potatoes, turnips, cabbage, cauliflowers, spinnage, pease, beans, and french-beans. The following are to be avoided; *viz.* artichokes, radishes, asparagus, onions, and all raw salads; also, cucumbers, unless eaten with salt only. The patient should at all times avoid eating too much, as, if the stomach be furcharged, digestion is imperfectly carried on; whence flatulencies, want of sleep, &c. are produced, and the disease is heightened by the urine becoming crude and ill-prepared.

The best kind of malt liquor for those who live in London is porter, reduced with water to the strength of table-beer: in the country, choice should be made

of the finest and best fermented ales,
or table-beer,

In respect to wines, (which should be drunk only at, or after dinner,) the table at the end of this chapter, will shew which are the least liable to reduce the power of the Solvent: the same in regard to fruits, which, as well as wine, should be taken only with dinner, either in tarts or with, or without, sugar by way of dessert.

In the afternoon, tea or coffee may be drunk, with bread and butter, toast or biscuit.

With respect to supper the greatest caution is necessary that it may not (by its being taken so near the dose of the Solvent) militate against its operation. It is wished that the medicine should be absorbed with as small a quantity of
chyle

chyle as possible, and that it may avoid all hasty fermentations in its passage from the stomach ; for this reason panada, water-gruel, milk-porridge, dry-toast, or biscuit are to be preferred to other things ; or at most an egg and spinnage, or a boiled egg, drinking rum or brandy and water ; or, which is better, wine and water. Where a thirst prevails, it is proper to have recourse to a draught of barley water at any time in the day.

Concerning the quantity of fluids that should be drunk in the course of the day, it should not be less in the whole than about five English pints of 16 ounces each. By this is meant the broth, tea, barley-water, and all the liquids drunk throughout the day ; but in cases of fits of the strangury, attended with a more than common irritation, it may be necessary to enlarge that quantity, by drinking copious draughts of veal-broth
or

or almond emulsion.—Let it be particularly remembered, that acids, and all strongly acescent liquors, should be forbidden during the use of the Solvent, especially near the time of taking it; so that fruit, or tarts at supper, cannot but be highly improper.

Many persons are strongly inclined to be costive during the first ten or twelve days of taking the Solvent. This is by no means an unfavourable omen; it is a proof that the latter secretions of the body are moderated, and that the medicine will not pass off too precipitately.

Now although this costiveness will generally go off spontaneously at the end of the above time, yet it is often very necessary to loosen the belly with some gentle aperient medicine, such as any of the following; *viz.* magnesia; manna;—infusion of Senna, or Rochelle salts.—

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Half

Half an ounce of the latter taken in half a pint of water gruel, never fail to procure the desired effect, leaving the bowels cooled and refreshed. These laxatives are not, however, to be used but from necessity, and even then a frequency of stools is not desirable, since it would lessen the power of the remedy.

From some particular suggestions, I have devised the following method for the benefit of those who continue the use of the Solvent, and which I have lately recommended, with very considerable efficacy.

Many and reiterated observations have convinced me, that the surface of the stone is often rendered clammy and unctuous by the effect the Solvent takes upon it. This clammy substance is of the same nature as that discharged with the urine, of a clay colour.—Now I have found

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found that this gummy matter, when it furrounds or envelopes the stone, defends it, in a measure, from the full operation of the Solvent; and that when it is detached from the stone, this being again laid open to its entire force, the cure is thereby greatly accelerated.— To bring about so desirable a circumstance, without the preposterous and dangerous effect of strong exercise or motion, has been the object of my wishes; and I find nothing so advantageous as the following.

At the distance of about every three weeks, one may reasonably presume that the outside lamina of the stone has been reduced to the consistence above described, in which case I recommend the patient to take in the day 3 or 4 half pints of new cheese whey, observing an interval of five or six hours from each half pint. This is to be done for three

N 2

days

days successively, during which time the patient is requested to walk about gently on smooth ground, as often as shall be found consistent with the state of the disease. In prosecuting this method, which is to be pursued at the end of every three weeks while taking the Solvent, the diet for these three days may be in every respect as before.

This course will also be attended with another good effect, which is, that should any costiveness predominate, the whey will remove it, for which reason the Solvent is to be omitted while the whey is taking.—There can be no difficulty in procuring this whey, since where ever new milk can be had, whey may be made at home, by keeping constantly in the house a sufficiency of *rennet*.

A TABLE

A TABLE SHEWING THE PROPORTION IN WHICH SEVERAL WINES AND JUICES OF FRUIT REDUCE THE POWER OF THE SOLVENT ON THE HUMAN CALCULUS.

The standard for the following experiments was that of one part Solvent and three parts simple water, the most natural vehicle for its operation.

That mixture, as well as the rest, was kept in a regular, and nearly a blood heat, by the thermometer, for twenty-four hours. The result of these experiments, therefore, points out which of these articles ought to be less desired or more abstained from than the others.

The standard mixture had power on a piece of calculus, of four scruples weight, to the degree of — 40
N 3 With

With the same quantity of juice of red currants, in the same ratio, it was reduced to only	—	12
With red gooseberries	—	14
With codlings	—	17
With mulberry juice	—	21
With peaches, apricots and necta- rines, nearly alike	—	25
With pine apple juice	—	27
With the juice of ripe melon	—	29

WINES REDUCED THE SOLVENT
AS FOLLOWS:

A light florence, or carminiano wine	—	24
Vin de grave, lisbon, malaga <i>nearly</i>		25
Old red port	—	26
An old burgundy and claret	—	27
With mountain and frontiniac	—	28

From the above table we see the
difference is very trifling with regard to
the several wines, on'y it behoves one
to

to be careful that they have a certain body, and good age, otherwise they are more susceptible of hasty fermentation in the stomach.

I have already made mention that many persons, among the rest some of the faculty, have not hesitated heretofore to deny the possibility of dissolving a stone in the body. But from what has been already said on this subject, I am inclined to think no one will hereafter advance that assertion, nor even risk his reputation so much as to wonder how it can happen. Such persons have been led to look upon the human calculus as similar to stones of the earth; but although their superficial resemblance is considerable, there is but little affinity in their internal construction. Stones of the human body can never be so hard as stones of the earth, since in their accumulation they lack the continued access of common air,

and have more than their share of fixed air. This is the reason why stones of the earth are harder in their exposure to the common air; and stones of the human body softer.

That the progress we make in dissolving the human calculus is, in most cases, slow, I grant; and in some, almost imperceptible; but still I am fully convinced there is no stone of the human body that will not yield, in some degree, to the power of the menstruum before mentioned. The formation of the calculus is not a work of a week; it is sometimes that of many years; surely then it is unreasonable to expect that a moment, as it were, should be sufficient to undo that, which had been effected only in a very considerable time.

Others, who are now obliged to subscribe to the dissolving power of the
Solvent,

Solvent, still object to admit that power to be specific; insisting, that although it dissolves the stone, yet as it may hurt some parts of the constitution, it is but a small acquisition to physic. This, as well as many other objections of the like nature, stated by particular persons, is not to be wondered at, nor will such cavils ever cease to be. But to overturn objections of this kind, I need only refer the reader to the several parts of the treatise upon that subject, reminding him of a case of the cure of the child of seven years of age. And above all, to the following circumstance, which proves, that the same Providence that directs the means for discovering any good, often brings about means also for rendering that event as useful as possible, and as little liable to false deductions. What follows, while it is an instance of this, serves to defeat such groundless

less objections, of which we have been speaking.

My lord bishop of Clonfert in Ireland suspected he had the stone, and, accordingly, requested Sir Robert Hamilton, to send him two large bottles over to that kingdom. By some mistake in overlooking the directions given with the Solvent, he took three table spoonfuls instead of tea spoonfuls, for a considerable time, even till he had nearly taken the whole; and though the quantity he took was six times more than ordinary, yet he found not the least disagreeable effect from it, although his lordship's case, when referred to me, was found not to be the stone.

It was very natural to suppose what really happened on the first discovery of the Solvent, that many attempts would be made to analyze and imitate it.

This

This was actually undertaken by Chymists as well as others; and as its basis participates of an alkali it was said to be a *soap ley* in a disguised and improved form. If the Solvent were really soap-leys or any thing of a similar nature, it must have added to the dire complaints of the Reverend Mr. Moore, instead of removing them, and, besides, it could not be given with safety to stomachs so emaciated as those of Mrs. Barnes and others.

No efforts have been uneffayed, by particular people, to endeavour to suppress the general admission of the Solvent in cases of the stone, by bringing instances of some people having lost flesh in proportion as the stone was diminished; but when it is considered that most people, when they come to be debarred of one of the meals they have been long accustomed to, it is no wonder
if

if their bulk should, in a small degree be diminished. Add to this, that many, from the dreadful sufferings of the disorder, are glad to embrace any regimen, however strict, forming an opinion, that it cannot be too much so for the operation of the remedy; insomuch that I have often found it necessary to slacken the rigour of the patients' diet, and absolutely to enforce a glass or two of wine. At the time the Solvent was thought susceptible of analyzation, many untoward accidents had like to have happened, which clearly evince what false inferences may sometimes be drawn from the system of decomposition. A physician, in every respect eminent in his profession, consulting with a chymist about decomposing the Solvent, had been induced to tell his patient, a person of considerable rank, that he could supply him with it in a more *summary* way, and actually prevailed upon him

to

to try it.—The consequence was, that the operation of the substituted medicine alarmed all the parties to a great degree: Now though I was told the circumstance by this gentlemen himself, yet, as I am inclined to believe the thing was done without the least ill intention, it would be unjustifiable in me to mention the parties' names. Thus much, however, I thought necessary to declare, to prevent any ill consequences hereafter from a like attempt, since it is at all times dangerous to be guided by the appearances of a compound medicine. Besides, were it even possible to investigate the several ingredients of a composition, yet the proportion with which they are compounded is a material article to the safety of its administration.

An indigent shop-keeper in a considerable city of England, having procured a few bottles, endeavoured to imitate
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the colour and taste of the medicine as nearly as possible, by the help of a second person. With this counterfeit medicine, which he sold as my genuine Solvent, he had very lately liked to have killed a gentleman, who with indignation, on the discovery of the fraud, sent me the counterfeit for my inspection, requesting me to prosecute the impostor; but as, on inquiry, I found he had a great family, who already experienced the frowns of fortune, I was induced to with-hold a prosecution which must, in the end, have plunged them into greater miseries.—I have been the more particular in relating this circumstance, as it may serve as a caution to the public to take the Solvent in future, only from persons of character and reputation.

It may be easily enough conceived that the author feels no particular gratification from the mere possession of an
arcanum;

arcanum; but it would be extremely hard if men were not to be indemnified for the expences they may have incurred in making experiments, and even rewarded, in some manner, for such discoveries they may make, in consequence of their researches that tend to the public good. I believe there are few persons, whatever may be their situations in life, and however possessed of a generous philanthropy, that would undertake and search for such discoveries but in rather a luke-warm degree, except for the hopes of some immediate or future reward. If this were not the case, where would be the necessity of societies and states offering pecuniary or other equivalent compensation for such disclosures.—When ever the state shall be fully convinced of the importance of this discovery to mankind, and the use that may be made of it, and shall offer me a reasonable compensation for divulging it,

it, I shall be ready to accept of it although my with-holding it might be of much more private advantage. In the interim, I would have it understood, that it is far from my intention to preclude any person from partaking of its benefit, notwithstanding the price at which I may be induced to dispense it. Although a man may be well enough entitled to a recompense for any important discovery he may make, in consequence of a studious application to a particular subject, yet he is certainly not entitled to exclude any persons from participating of its good, by any ambitious or capricious motive. That would be defeating one of the great ends aimed at in societies, which is, that of deriving mutual advantages from the discoveries or advances made by individuals in any one branch of science. Nevertheless, for the investigator to have a particular interest in such discovery,

covery, is by no means incompatible with those great ends above alluded to.

The author is also conscious in how disadvantageous a light the favourer of any arcanum may be regarded, by those who are unacquainted with his motives, since many persons, in every respect divested of physical knowledge, are the common dispensers of nostrums, and equally the trustees of peoples' health. But, however painful it must be to the author to recite any circumstance that may seem to allude to a self-com-mendation, he cannot forbear mentioning that, at this time, almost the whole colleges of the faculty are reconciled to his motives, and to the utility of the discovery; since they judiciously consider that this is almost the only disease in which the same treatment must be pursued, and the Solvent the only remedy hitherto discovered, whose operation has been

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specific

specific on the urine.—In other disorders, however great and efficacious a remedy may be, if properly directed, yet, should it be given when circumstances differ, though the disease be present, great mischief might ensue for want of taking in view the concomitant symptoms.

Some persons may be ready enough to remark in this place, that since the Solvent is a specific in this disease, all persons must be equally benefited by its use. They may also be induced to ask whether no person has ever taken it without being cured?—To which I would answer, that several, to my own knowledge, have taken it, and were still uncured, and yet its specific power on the stone is as obvious as that of any one operation in nature.

It

It has been shewn already, that stones are of very different degrees of hardness, and, consequently, liable to be a longer or shorter time in dissolution.—Many stones, while in the body, are thought to be but small, because the pain they occasion has been supportable; and, indeed, should a person, having the stone, be told otherwise by the operator after sounding, I should deem him at least incautious and imprudent, since the knowledge of it would have added to the patient's unhappiness, without lessening his pain. Now, whenever such a case occurs that a person believes the calculus small when it is large, and flatters himself it is soft when, perhaps, it is extremely hard, no wonder he should despair of the efficacy of the remedy he takes, provided he be not cured in a certain time prescribed to himself as sufficient for the purpose. Suggestions too of the like import are too frequently thrown out by

some one about the patient, who may be interested in some degree in his conduct and the methods he pursues to obtain a cure.

The first case of this nature that came within my knowledge was that of Mr. Vincent of Beech Hill, Surry, a gentleman universally esteemed, and whose loss was much lamented. He took the Solvent for about ten weeks without any visible amendment, although, during the last five, he evacuated a good deal of fine dust, and at one time a fragment of a stone; but as the pain continued very violent he was too easily persuaded to believe that the Solvent took but little or no effect on him, and that all reliance on a cure, except in the *operation*, was vainly fruitless. Strongly impressed with this idea, he came up to town, and submitted to be cut. A stone of a considerable size was taken out of his bladder; but, unhappily for him, he died the
third

third or fourth day after the operation. This is commonly the effect of misplaced prepossession; no wonder then that a person misguided by caprice, or under the tacit influences of others, being too credulously led to believe the stone small and soft, when it may be quite the reverse, by falling out of conceit of the medicine, should suffer the dreadful consequences just now related.

Another instance of this kind was in that of the Reverend Dr. Forester, chaplain to lord Maynard. He took five pints of the Solvent, but as the alteration during that time of taking it was indiscernible, he was persuaded that the medicine had had no effect on him; for that the discharge of sand which, of late, appeared in his water was nothing more than natural. He also consented to suffer the operation, and miraculously survived for a time, though

the stone taken from him was as large as a duck's egg. Nevertheless I have been since told of his death, and that it was owing to an abscess that formed soon after the wound, which could never be brought to heal.

Now, altho' these are instances of the Solvent not having effected a cure, they are by no means instances of its want of efficacy in the disease, since the stones were both in a degree sensibly operated upon. Indeed, nothing but a preternatural power could have dissolved such stones in so short a time. That stones of a very considerable bulk often lie in the bladder without occasioning extraordinary suspicions of their size, is very evident; but in no case more striking than in that of the late admired, and much to be lamented David Garrick, Esq. His case, so far as it came within my own observation, was very remarkable. Every one
knows

knows the reason of his leaving the stage, and for that same reason he consulted me about his taking the Solvent. Convinced of the nature of his disorder, I urged the necessity of his beginning a course of it, in consequence whereof he had the pleasure to find his pains greatly diminished, and that a fine earth was evacuated in quantities with his urine. The pompous declamations and flattering promises, however, of a noted Foreigner, got the better of his understanding, and prevailed upon him totally to lay aside the Solvent, and to have recourse to him for assistance. Mr. Garrick, who was universally allowed to be very fickle and unsteady in any thing concerning his health, was as ready to adopt any new system or opinion concerning his disorder, as there are persons ever ready to obtrude them; but unfortunately for this new physical Oracle, the vague, unscientific account he gave Mr. Garrick concerning the nature

of his disease, (alleging it to be a defluxion of humours from the head, with many other such absurd chimeras) opened his eyes and determined him to avoid the treatment of a man who had shewed himself, by his conversation, ignorant of every part of the human body. He had therefore a second recourse to the Solvent, and took it for some time, tho' not regularly. The last time I inquired of him how he proceeded, and the effect produced, I was answered, that he believed the stone was either greatly diminished or totally dissolved, but that he had a great tenderness and exquisite sensation at the neck of the bladder. Now altho' he had voided so great a quantity of earthy powder, yet by the account I received from himself, I gave him to understand the certainty still of the existence of a stone; but as he was at this time utterly averse to the introduction of the sound, by which he might have been satisfied, I
 could

could not prevail on him to adopt my opinion, tho' he determined whenever he should be attacked with immoderate pain, to have immediate recourse to the Solvent, in which he never failed. In short, he was a strong and incessant advocate for its use, and constantly recommended it, with energy, to such of his acquaintance whose cases were similar to his own.

The manner of Mr. Garrick's death is pretty well known; and tho' the seat of the immediate disease by which he lost his life, was not the bladder; yet an inspection was made into it, out of which a stone of the following figure and dimension was extracted. It was of a flattish oval, of a dense body, heavy in proportion to its size, $5\frac{1}{2}$ inches in circumference, the transverse diameter 2 inches, the conjugate $1\frac{3}{4}$ inch, and the thickness $\frac{7}{8}$ of an inch. This is an exact description

tion of the stone which his disconsolate widow shewed to her Right Hon. friend Lady L——n, by whose means I was favoured with the above account. Now tho' it is beyond a doubt that the Solvent kept him easy, and smoothed the surface of the stone, by reducing it to the clammy consistence heretofore mentioned; yet no one could reasonably have expected a stone of that kind could have been dissolved but with a considerable time, and by a regular perseverance in the use of the medicine.

I have been thus particular in reciting these cases, since the public are susceptible of being misled by false representations. Indeed the case of Mr. Garrick plainly shews, that where the Solvent is taken only at intervals, it will soften and smooth the surface of the stone, procure a respite from the pain, and enable the patient to pass a comfortable life. This
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is strongly corroborated in the case of Sir Robert Hamilton, Bart. who takes it now and then with a view to prevent the farther accretion of the stone, and to keep its surface soft and chalky. Finding this end has been fully answered during the experience of three years, taken in the above manner, added to the more than probability of the stone's diminution; Sir Robert is extremely unconcerned about the consideration of its total dissolution, nor does he choose to attempt putting himself under any, the least, restraint, since he leads a very comfortable, easy life, and is not prevented either from exercising in a carriage or walking on foot.

Although, as I remarked before, there are many of the faculty not less the ornaments of humanity than an honour to their profession, who are happy in this my discovery of the Solvent, and have
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been pleased to compliment me on the occasion ; yet there are some who are a little too selfish and contracted in their ideas to view it in the same impartial light ; maintaining, that although it has dissolved some stones, it will not be effectual in others, and therefore rather too precipitately recommend the operation of the knife. As it is impossible for me to judge rightly by what motives they are actuated in giving their advice, I shall forbear to make any comment, contenting myself with laying before my readers the speech of a surgeon, in no small repute, on the point in question.

A gentleman who expressed his wishes that his friend (now dead of the operation of lithotomy) had tried the Solvent a longer time, before he had been cut, met, I am told, with this uncandid retort ; “ that if he (the gentleman’s friend) had never taken the Solvent,

vent, he might have been then living."—
 Allowing the possibility of such a speech,
 what strange opinions are we not led to
 form of the assertor's candor, and judgment? Such an assertion, as it cannot
 be accounted for upon any rational principle, is illiberal in extreme, and unworthy of the professor and the profession.
 However lucrative this part of surgery may be, humanity forbids that such a consideration should have the least bias, when giving one's advice to the afflicted in this disease, seeing the patient's life, depending on the success of the operation, is put in the counter-scale. I could wish therefore, for humanity's sake, that the effects produced by the Solvent (although its composition be an arcanum) might be viewed in an unprejudiced light, and the operation suspended, at least, while there is a probability of curing the disease without hazard or danger.

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It can be no pleasing reflection to the humane, to have caused such unhappy persons to undergo so painful and perilous an operation. A previous trial of the power and efficacy of the remedy in question, would, I am persuaded, preclude the necessity of recurring to the knife. To some this language may seem to favour both of vanity and self-interest, but when the former cases of dissolution of stones are taken into consideration, together with multitudes of others, which must, no doubt, have reached the ears of the world, while I am proud of attributing to myself the merit of the invention, the more generous part of mankind, will, I flatter myself, acquit me of any fordid, mercenary view.

Whatever advantages may accrue to me from publishing the remedy, it is certain my first motives were pure humanity. Every individual, however,
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will have his own private thoughts; but in whatever light this be viewed, it surely cannot be inconsistent or unreasonable to recommend it, in preference to the operation, seeing it is not only possessed of a dissolving power, but even compatible with the constitution. If any medicine of a superior power and property to the Solvent, should be hereafter discovered, the public has discernment enough to give it the preference; and till this be done, I have no doubt but the judicious part of mankind will judge for themselves, and neither implicitly pin their opinions on the sleeves of, nor blindly trust their lives to, the narrow-minded and prejudiced.

At the time when the public had formed great expectations concerning the effects of fixed air on the human calculus, which, from some plausible circumstances were natural enough, might not the exercise

ercise of the knife on any one person, prior to proving those effects so warmly contended for by several eminent physicians, be deemed rashness, if not cruelty, especially as the trial was easy and in every one's power. And, on the other hand, if the issue of these trials had been what the world were really led to believe, it would have been folly in me to have expected any farther indulgence in that the public should continue to have recourse to the specific Solvent. All I can reasonably expect is, that while its efficacy is greater on the stone than any medicine hitherto known, and while it is proved salubrious to the Constitution, that it may, at least, be tried prior to the knife. In saying this, I would not be understood to declare that every person who takes it must of course be cured, however large the stone be, but that its operation, while it is mild and innocent to the constitution, is infallibly specific on
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the urine and stone. To exempt myself from the least imputation of being influenced by any sinister and unworthy views, I am both willing and desirous to submit the effects of the Solvent, to the trial of any one or more gentlemen of the profession. Let them choose a number of proper persons, in any of the hospitals, who are allowed to have the stone, and after administering the remedy, I shall be solicitous that the issue thereof be made public to the world. I am the more anxious for this essay from the following motive; that although the preparation of the Solvent is a secret to all but myself, it may not induce any gentleman to look upon it with indifference or contempt; which circumstance, by hurting the cause of humanity, might be a means of with-holding from the world, what was intended as a blessing to the afflicted.

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C H A P. VIII.

S E C T. I.

STRICTURES ON THE GOUT, SO
FAR AS CONCERNS A COMPLI-
CATION OF IT WITH THE STONE.

THE Gout is another of the dire evils,
to which human life is heir ; and
when it falls to the lot of a person already
afflicted with the stone, must, of course,
render the patient's existence a scene of
affliction.

This is by no means intended as a
dissertation on the gout itself, since
much

much more might be said upon its cause, indications, and cure than can be necessary in this place; and yet every thing is said that may concern an individual who should suffer a conjunction of the two complaints.

From the great number of persons afflicted with both these disorders at the same time, I was led to conclude that one of them must have a considerable influence in bringing on the other: how far this is the case I shall leave the judicious to determine by the reasons hereafter given.

Now supposing a person to be first attacked with the stone to any degree, of course he is excluded *exercise*, one of the most powerful and successful means of keeping the blood and juices in a due and healthful temperature. For want

of that exercise the blood becomes dense, and the juices of the body vitiated and roapy, consequently, more likely to form, and less able to throw off, any morbid concretions formed in the vessels.

That nothing can be more likely to do this than a deprivation of exercise, is obvious to every one ; it is even the first thing recommended as a remedy in a lentor of the fluids. In the stone (particularly of the bladder) the patient has generally a good appetite to victuals, so that it is no wonder the juices of the body should degenerate and run into the crude state before mentioned, when no exercise can be used to carry off the feculencies of the fluids.—When the several juices of the body have acquired that unnatural viscosity, daily experience evinces their circulation is lessened in proportion to their increased consistence.

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The formation of those chalk stones of the joints is exactly analogous to the stony concretion in the kidneys and urinary bladder, since a languid circulation is a cause of the former, as a diminished action of the vessels upon the fluids is that of the latter; nor is the cause of these two disorders, the only analogical part of them, since their paroxysms, and the efforts nature makes to obtain a relief from them, are exactly similar; for as soon as the constitution becomes sensible of a stony concretion having formed itself in the kidneys or bladder, the consequent irritation of such concretion brings on a symptomatic fever or Paroxysm, which is called a fit of the stone, and if the concretion has not proceeded too far before the habit is alarmed, it will, if in the kidneys, be thrown into the ureter, and from the bladder into the urethra.—Now let us advert to the progress nature pursues in
the

the other disease. As soon as the gouty matter is formed from the serum of the blood, the same heat and fever are excited, and by means of an increased circulation the morbid matter is thrown from the more vital parts to the extremities or joints, where the resistance is less, an extraordinary heat and partial fever take place from the part having become the depository of the foreign matter, and a violent sweat from the relaxed mouths of the vessels ensues, and frequently proves the present cure of the disease.

I shall not even enter into a detail of the method of cure to be pursued in this disease, since without doubt if any one should be adventitiously attacked with it during a course of the Solvent, he will apply to a physician for proper assistance; but it is necessary to observe that it will be adviseable to omit the Solvent during the administration of other remedies
ordered

ordered for the gout, as they would militate against the operation of the Solvent; for instance, should the disorder attack the stomach, warm cardiac medicines would undoubtedly be prescribed, that would considerably weaken or destroy the effect of the Solvent:—again, if the disorder should be seated in the extremities, diaphoretics would be resorted to, that would, in an equal degree, frustrate its operation, since its power which should be exerted in the bladder would, by the sudorifics, be directed to the superficies of the body.

In habits long accustomed to the gout, it is highly probable they may not escape an attack at the usual time; but it has been remarked to me by many under complications of these disorders, that since taking the Solvent the fits they have been seized with have been more moderate, and of shorter duration than before.

before. I imputed that circumstance to accident till I considered that at the same time they remarked their appetite mended, and their digestion had become stronger from the time they began the course of the Solvent. I have therefore only to add that gouty persons are by no means precluded the benefit of taking this medicine, since it will not in any respect aggravate their complaints, nor will the remedies given in the latter disorder be attended with any other consequence to the stone than retarding its cure, by the course being intercepted during the taking of the new medicine.

F I N I S.

A P P E N D I X.

C A S E X.

*The following Letter came too late to Hand
to be inserted in its proper Place.*

To Mr. P E R R Y.

S I R,

WE, the Minister, Church-warden,
Overseer, and other the principal inhabitants of the parish of Elsenham, in the county of Kent, join with James Clark in returning you our most hearty thanks for the very remarkable cure of him by your most valuable Solvent. He is a very sober, honest, poor man, who has no less than seven children. He had been greatly afflicted with the Stone and Gravel for many years, but for the last
four

before. I imputed that circumstance to accident till I considered that at the same time they remarked their appetite mended, and their digestion had become stronger from the time they began the course of the Solvent. I have therefore only to add that gouty persons are by no means precluded the benefit of taking this medicine, since it will not in any respect aggravate their complaints, nor will the remedies given in the latter disorder be attended with any other consequence to the stone than retarding its cure, by the course being intercepted during the taking of the new medicine.

In habits long accustomed to the gout it is highly probable they may not escape an attack at the usual time; but it has been remarked to me by many under complicated disorders, that **F I N I S.** since taking the Solvent the fits they have been seized with have been more moderate, and of shorter duration than before.

A P P E N D I X.

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four

four or five to such a violent degree, with such excruciating fits, as to render him quite incapable of stirring out of his house for four years together.

Your Solvent brought from him great quantities of Gravel, and pieces of Stone, and now, by the blessing of God with that excellent medicine, he is so well restored to health, from that disorder, which had baffled the power of all other medicines, that for above a year past he has been able to go to his daily labour as another man, and has gone through it with far more ease and pleasure than could possibly be expected; to the great astonishment of every body who knew his case.

Your generosity and goodness to this deserving object of compassion, in sending him the Solvent, time after time, *gratis*, cannot fail to yield a true satisfaction

faction to, and reflect the greatest honour on your liberal mind ; and we beg leave to assure you, that we are ever ready to publish and authenticate this very singular and extraordinary cure, in justice and gratitude to you, and as a duty we owe to the public.

Signed by order of the said Parishioners, the 27th of May, 1779,

By, Sir,

Your most obliged

humble Servants

JOHN CANNING, Minister,

JOHN MUMFORD, Church-warden.

JOHN PAMPHILON, Overseer,

As I was not particularly acquainted with the manner and progress of the cure of this Man, of course I can have no
obser-

observations to make thereon. This letter was accompanied with one from a Mr. M^cWhinnie, who mentions his being considerably benefitted by the Solvent, being now under a course of it. Mr. M^cWhinnie at the same time informs me of the cure of a Mr. Pavitt of the same town, with one also of a Mrs. Quilter, in the neighbourhood; and it is at the particular desire of the parties that this letter is published.



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